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Chapter II. Aechm II (1/2) (21)
Voluntary & Care Tim 2 2007
by David Kelley

1953-1954



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Content # 21

- ① Revised ms. of Ch. II, Sect. II: Valenzuela's Cave (Tm c 248), by David Kelley (pp. 1-99)
- ② Obsolete version of above, with correx by MacNeish, numbered pp. 70-101
- ③ Copy of pp. 70-75 of ②
- ④ Original draft of Kelley's ms, numbered pp. 75-81, with correx by MacNeish
- ⑤ Copy of revision of draft ④

Manuscript 248

CHAPTER II - Section II

Valenzuela's Cave (Tm c 248)

by David Kelley

Introduction¹

Tm c 248, or Valenzuela's Cave as we have called it, is a two-chambered cave located in the Penal de la Virgen (popularly called Flacco) tributary of Infernillo canyon in the Sierra Azul, north of Ocampo, Tamaulipas. Geologically, this limestone area, honeycombed with caves, belongs to the coastal zone, but physiographically it is one of the lesser ranges of the Sierra Madre. This cave is one of a series occupying nearly the same height above the canyon floor, apparently formed due to a slightly softer layer in the limestone. Portions of Tm c 248 lie directly under portions of Tm c 247.

The cave is somewhat more sheltered than Tm c 247, and remained pleasantly cool on hot days. The remarkable preservation of vegetable materials is sufficient to attest that most parts of the cave were free from excessive moisture, although there was some seepage in one corner. The cave is on the south side of the canyon, with one of its two entrances facing nearly north and the other approximately west by north (see map). The two chambers (which are connected by a passageway in the rear) have been called for ease of reference the east chamber and the west chamber, as they would have been if oriented along the canyon, although in fact their compass directions do not warrant the terms. The conventional

1. The study of these materials was partly supported by a grant from Harvard University. (CHECK with Willey just how he wishes this acknowledgment made)

Section 11 - 11.000

San Gabriel's Cave (11.000)

San Gabriel's Cave

San Gabriel's Cave

The cave is situated in the San Gabriel Mountains, about 10 miles north of Los Angeles. It is a large cave, about 100 feet long and 20 feet high. The entrance is on the north side of the mountain. The cave is filled with stalactites and stalagmites. The stalactites are of various shapes and sizes. Some are like icicles, some are like mushrooms, and some are like flowers. The stalagmites are also of various shapes and sizes. Some are like pillars, some are like mushrooms, and some are like flowers. The cave is very dark and damp. The air is very stale. The floor is covered with dirt and rocks. The walls are covered with stalactites and stalagmites. The ceiling is covered with stalactites. The cave is very interesting and worth visiting.

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directions N, S, E, and W in which the squares were laid out are similarly modified from the true directions, which can easily be determined from the map. The west chamber is considerably higher and narrower than the east chamber, and opens more directly into the canyon. It is less protected than the east chamber, but lighter and more cheerful. The east chamber has a low roof, so that we and several of our workmen bumped our heads on it on different occasions. At the time of the first occupation, when the deposits had not yet been laid down, the floor was enough lower so that this would not have occurred, but it must occasionally have bothered the inhabitants during the latest occupation period.

Excavation

The excavation was the first that Kelley directed, and his previous field experience was limited to assisting in Tm c 247, some participation in a student dig at Teotihuacan, and a summer digging as workman in the Roman and Anglo-Saxon sites at Southampton, England. The workmen were without experience, except for two who had aided in the excavation of Tm c 247. With these drawbacks, a number of mistakes were made, mostly involving insufficient recording of data, and often becoming apparent to us only during the analysis of materials. During the first half of the dig, the correlations of levels from one square to another were not always adequate; at that time, a standard series of levels was adopted, as the general sequence of the stratigraphy had become clear, and we believe that the squares dug subsequently were correlated as adequately as was possible. Profiles were not always drawn as soon as a square was dug, but were left for later when the profiles themselves were left, since the men were digging faster than Kelley could keep up with them, and at the time, operating on a rather meagre budget, it seemed to him

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inadvisable to leave them idle for long periods while he drew up profiles. Thus Kelley could not draw up the profiles and let them wait, but at the time the presence of the actual profiles in the ground seemed sufficient. He had not then fully realized possible difficulties in correlating such profiles with square descriptions done at a different time.

The entire cave was divided into five-foot squares, marked off by wooden stakes. The squares were named after the stake in their SE corner which in turn was measured in conventionally determined directions N, E, S, and W of a zero stake. Both east and west chambers were measured from this zero stake. The first square dug, N10-E5, Kelley did himself in order to demonstrate to his new workmen what he wanted done. This square was dug by arbitrary levels. All other squares were dug by natural levels, with the exception that certain large pits from what was later called Level 2, including sometimes more than a complete square were not originally recognized as pits and were dug by arbitrary levels, as natural levels were not apparent in them. Profiles were normally drawn only at five-foot intervals, and artifacts located only by square and level, although the actual digging unit was about one third of a square, and profiles were cleaned at such points before proceeding with the square. No attempt was made to establish sub-divisions within the gravel, although it was cleared one shovel's depth at a time, roughly, so that some estimate could be made as to whether an artifact was near the top of the gravel or 'well down in', that is more than one shovel's length down, normally. All materials were screened, and the workmen were instructed to save many dubious artifacts and plant materials on the presumption that it was better to have things and decide to throw them away than to wish that you had saved things which were dis-

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carded. Even so, it is probably that many of the cruder stone tools were discarded. Only distribution analysis sufficed to convince us that some of my tool types really were artifacts. Our seven workmen alternated between digging and screening, with one man moving back dirt each day. All domestic plants and all plants which showed signs of having been used as food were saved in all squares, and all vegetable materials from some squares were saved. All bones were also saved.

The plan of excavation was to end up with three trenches, running north and south and connected by a cross trench on the north of the cave running east and west. This was done, and left standing parallel profiles at five-foot intervals across the cave, which were very helpful in correlating the levels. They were finished about half-way through the dig, and at this time we had been packing the materials decidedly haphazardly, only making certain that level and square labels accompanied each bag of artifacts and/or vegetable remains, and only separating the most fragile artifacts, such as mats, from the vegetable materials. A twenty-mile (or more) trip with the artifacts loaded on mule back and often swaying distressingly convinced us that this was not the best way to transport artifacts, and that artifacts which were to be transported in this fashion (as they had to be) had better be more carefully packed.

On returning to the cave, Kelley set up the system of eight levels by which the remainder of the cave was dug. At the same time, he decided to wash and number all stone artifacts and potsherds as they were excavated. The photographic record was decidedly skimpy, but in most cases there seemed no reason for photographs, except a punctilious regard for the record. Kelley does not believe additional photographs would have aided the analysis at any point where it would conceivably have occurred to him to take them. Most of the photographs were taken

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by Peter P. Pratt when he came out to the cave near the end of the excavations, although Kelley had one camera with him for use in case of possible burials.

In spite of these errors of procedure and occasional mishaps, we do not believe the analysis has suffered particularly from them. Generally speaking, in correlating the profiles, when a level in a square was rich enough so that several artifacts were found in it, it was distinctive enough so that it could satisfactorily be correlated with other squares. In only one case was there doubt as to whether a level belonged to the pre-Ceramic or Ceramic periods from its stratigraphic position, and in that case the complete absence of corn or pottery in a rich vegetable layer was sufficient evidence that the layer belonged to the pre-Ceramic periods. In most cases, the problems at issue are whether a particular level correlates with the general Level 3 or Level 5 in one case, or whether it is Level 5 or Level 7 in another. In one square a particular level may be Level 3, 5 or 7, but this is surrounded by pits from Level 2 which would have made it nearly impossible to determine in any case. In case of doubt, artifacts have been classed with the higher of two possible levels, as the frequent pitting from Level 2 made this a factor which had to be allowed for in analysis in any case. The accompanying table of correspondences of the levels in the different squares is the one which was used in analyzing the artifact distributions. I believe that its probably occasional inaccuracies are not such as to seriously affect the analysis. To spend hours of work attempting to iron out the minor discrepancies between two profiles when the result would affect at most one or two artifacts seemed a disproportionate effort.

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In spite of these errors of procedure and occasional blunders, we do not believe the analysis was seriously affected. Generally speaking, in correlating the profiles, when a level in a square was high enough so that several artifacts were found in it, it was distinctive enough so that it could satisfactorily be correlated with other squares. In many cases there was doubt as to whether a level belonged to the pre-Columbian or Spanish period from its stratigraphic position, but in case of complete absence of corn or pottery in a high level the layer was sufficient evidence that the layer belonged to the pre-Columbian period. In most cases, the problems at issue are whether a particular level correlates with the Level 3 or Level 5 in one case, or whether it is Level 5 or Level 7 in another. In one square a particular level may be Level 5, 7 or 9, but this is determined by the level 5 which would have made it nearly impossible to determine in any case. In case of doubt, artifacts have been placed with the higher of the possible levels, as the argument being that Level 5 was the first level which had to be allowed for in analysis in any case. The accompanying table of correspondences of the levels in the different squares is the one which was used in analyzing the artifact distributions. I believe that this is probably occasionally inaccurate but not such as to seriously affect the analysis. To spend hours of work attempting to iron out the minor discrepancies between two profiles when the result would affect at most one or two artifacts seemed a disproportionate effort.

A preliminary analysis was done with MacNeish in Cambridge at Easter time, 1955. This analysis, because MacNeish had studied the other caves, was a great help to Kelley, particularly with regard to the stone artifacts, although we have since departed from it at a number of points.

The second analysis was undertaken by laying out all the artifacts by levels and then examining them minutely for likenesses and differences. When types were tentatively roughed out, chi squares were done on some of them to see if the distributions differed significantly. Naturally, two validly distinct types may have the same distribution, but a significant difference in distribution is usually a fairly good indication that the distinction between the types is valid. One surprisingly helpful result of this was the realization that the west chamber provided a test of the amount of pitting done in the east chamber, and its affect upon the artifact assemblage. The west chamber contained only deposits of the ceramic periods and of the gravels, so that the people had none of the earlier deposits to dig pits into. This means that an artifact type which is found in abundance in the Level 2 ceramic deposits of the east chamber, or on the surface, and which is completely lacking in the west chamber has probably been dug up from the earlier deposits, which the abundant pits make likely.

The final analysis was done after all the vegetable and artifact types of the whole area had been established and the cultural complexes delineated. MacNeish then redrew, numbered and named the various zones, floors and occupations in accordance with a system that he had established for the other two caves. He then attempted to correlate this material and Kelley checked and corrected his results. In gross outline the stratigraphy, levels, layers, occupations and cultures were as follows:

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...and Kelley checked and corrected the results. In cross cutting the
...stratigraphy, levels, flora, occupations and cultures were as follows:

Zone A	- top vegetable or brown stratum	- Occupation 8 (Level 1)	- San Antonio
Zone B	- gray ash	- Occupation 7 (Level 2, 2a, 2b and 2c)	- San Lorenzo
Zone C	- vegetable	- Occupation 6 (Level 3 in Squares E25, E20 and S5W5)	- Flacco
Zone D	- white ash		?
Zone E	- vegetable	- Occupation 5 (Level 3 except above)	- Ocampo
Zone F	- gray ash	- (Level 4)	- Ocampo
Zone G	- vegetable	- Occupation 4 (Level 5)	- Ocampo
Zone H	- yellow ash	- Occupation 3 (Level 6)	- Infernillo
Zone I	- lower vegetable	- Occupation 2 (Level 7)	- Infernillo
Zone J	- gravel	- Occupation 1 (Level 8)	- Infernillo

San Antonio	-	Occupation 8 (level 1)	-	top vegetation or brown stratum	-	Zone A
San Lorenzo	-	Occupation 7 (level 2, 2a, 2b and 2c)	-	gray ash	-	Zone E
El Tiro	-	Occupation 6 (level 3 in phases H2, H3 H5 and H6)	-	vegetable	-	Zone G
?	-		-	white ash	-	Zone D
Ocampo	-	Occupation 5 (level 3 except above)	-	vegetable	-	Zone B
Ocampo	-	(level 4)	-	gray ash	-	Zone F
Ocampo	-	Occupation 4 (level 2)	-	vegetable	-	Zone G
Infernillo	-	Occupation 3 (level 6)	-	yellow ash	-	Zone H
Infernillo	-	Occupation 2 (level 7)	-	lower vegetable	-	Zone I
Infernillo	-	Occupation 1 (level 8)	-	gravel	-	Zone J

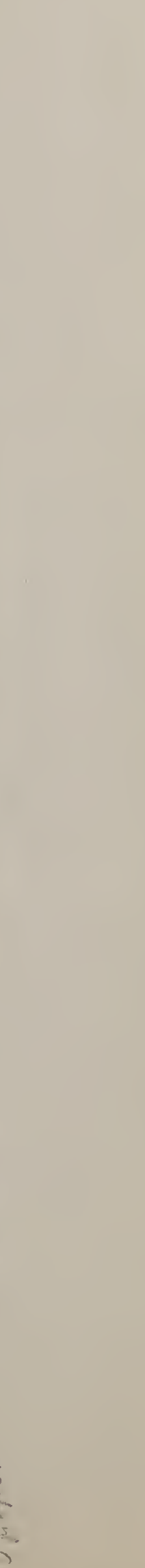


Fig. - Cross-section drawings of the East Chamber
of Cave Tm c 248.

Fig. - Cross-section of wings of the last generation
of *Culex tritaeniorhynchus*.

Overlying the limestone floor of the cave in both the east and west chambers, was a thick layer of gravel. Datum depth reveal that the top of this thick layer of gravel is slightly lower in elevation in the west chamber than in the east chamber. Both these layers of gravel, of course, are of a different height than the gravel in cave Tm c 247 and in cave Tm c 274. There also is a different thickness of this layer of gravel between the east and west chamber of Tm c 248. In Tm c 248 west chamber this layer of gravel varies from two feet to almost four feet in thickness, while in the east chamber it sometimes is only a few inches thick or does not appear at all and never is much more than two feet in thickness. Also, in the east chamber the gravel is thicker in the south end of the cave than in the north, that is, thicker in the interior, and there is a slight tendency for the top of the gravel to be on a slightly higher elevation along the side walls of this chamber. All these factors lead me to the conclusion that this layer of gravel was deposited by a stream that ran through the cave, carrying gravel with it, and somehow brought the gravel down through an unfound underground passage from the Mesa above and deposited it on the floor of the cave. Also these factors of the gravel, which we have just spoken about, would tend to be strong evidence against its having been deposited by the stream at the bottom of the arroya, 300 feet below the mouth of the cave. We still do not know where it got the gravel from on top of the Mesa, and exactly what passage it went through, but this seems to be the most logical explanation that we found for it. Obviously, the gravel, called Zone G, was deposited during a wet period.

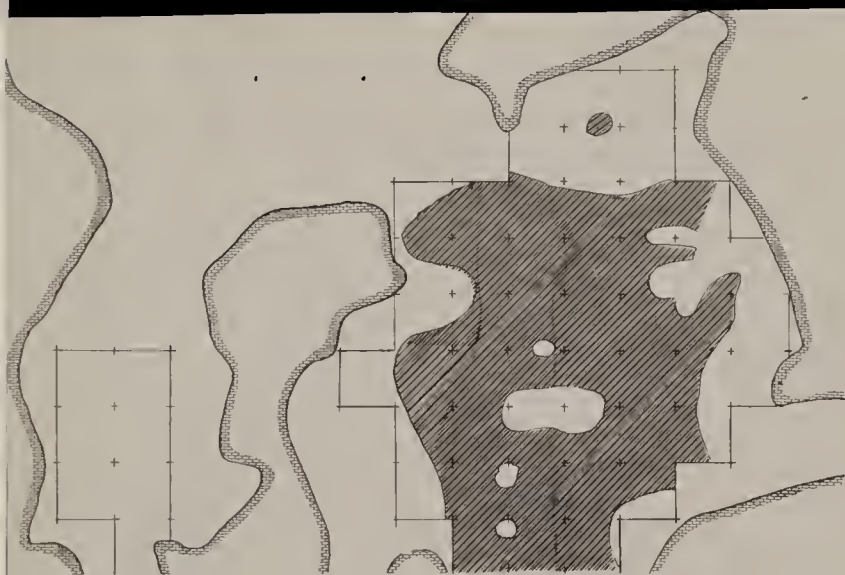
In a few spots in the top six inches of the gravel we found twelve artifacts and 86 fragments of bone. There seems to be little doubt that these are in the gravel and not intrusive into it, and I cannot help but

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of this chamber. All these factors lead me to the conclusion that this
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been deposited by the stream at the bottom of the cavity, 300 feet below
the mouth of the cave. We still do not know where it got the gravel
from on top of the west, and exactly what passage it went through, but
this seems to be the most logical explanation that we found for it.
Obviously, the gravel, called Zone II, was deposited during a wet period.
In a few spots in the top six inches of the gravel we found twelve
artifacts and 50 fragments of bones. There seems to be little doubt that
these are in the gravel and not intrusive into it, and I cannot help but

believe that this represents an occupation, Occupation 1, that was deposited before the final period of deposition of the gravel.

Exactly what sort of an occupation this first one was, cannot be determined because the gravel deposition had almost completely destroyed the original floor. However, from the artifacts, the bones and the little vegetable material we can tell something about the subsistence pattern of these people. There were 86 bones as well as a number of implements that might somehow be connected with hunting. The Infernillo points, the thin and thick side-scrapers, the two small discoidal end-scrapers, the two bone awls with pierced basal ends might somehow be connected with hunting. There also were a few fragments, twenty-two in all, of identifiable vegetable material. Eighteen of these twenty-two fragments are pods of runner beans. There are also a number of implements that would be connected with food gathering. These include pebble smoothers, two flat scraping planes and flat pebble choppers, and four thin saw-like choppers. This subsistence pattern plus the limited number of artifacts would seem to indicate that this first occupation was a very temporary one, made by a small group of people who did slightly more hunting than they did wild-plant collecting. The various artifacts in this top part of the gravels, are sufficiently diagnostic to allow us to classify it as being an occupation of the Infernillo phase. The Infernillo point, the pebble smoother, the pebble chopper, awl are Infernillo diagnostic traits. The disc scraper, the flat scraping planes and some of the other traits are of more general nature, but they usually also appear in Infernillo remains.

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disoidal end-scrapers, the two bone awls with pierced basal ends



Tm 278

Zone I

Occupation 2

Level 7

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Fig. - Distribution of Zone I, Occupation 2
in Cave Tm c 248

Over the gravel and over the rock, where no gravel appears, was a thin, reddish layer full of vegetable material which is called Zone I, Occupation 2, and this only occurs in the east chamber of the cave. It is a relatively thin stratum but it is quite extensive. In total it makes up about 150 cubic feet of refuse. There are a number of features that are connected with it which include a hearth, a pit full of vegetable material and one shallow depression with a mat in it. Also laid on this layer in a number of spots are fragments of mats with grass that might also be thought of as being beds. The large extent of this layer leads me to the conclusion that we are probably dealing with a macro band who were here for a very short time. A little pollen analyzed from Occupation 2 revealed that these people were here when the climate was a good deal wetter than it is at present. This vegetable layer contained abundant food materials. There are 222 fragments of bone in it as well

193. - Description of the vegetation in the area of the ...

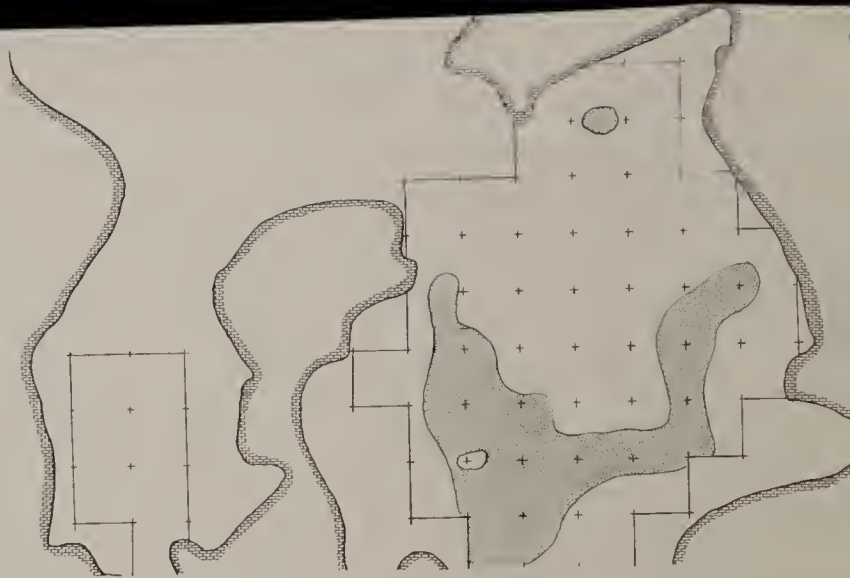
The vegetation in the area of the ... is ... and over the rock, where no ...
thin, ... of vegetable ... which is called ...
... and this ... in the ... of the ...
is a ... which is ... in the ...
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... ..

as two identified deer fragments, and a bone of a skunk. The Infernillo and Almagre-type points, as well as the atlatl foreshaft fragments all would be connected with hunting. More indirectly connected with the produce of the hunt would be the pierced based awl, conical wedge, large disk scraper, and the flake side-scrapers. Almost as numerous as the evidence of hunting was that of food gathering. 185 wild plant remains occurred. There also were six wild squash seeds and some wild runner bean fragments. Humped and flat scraping planes, scraper-graver-like objects, disk choppers, pebble choppers, slab choppers, and a fragment of a digging stick, as well as some of the basket remains; all would seem to be connected with wild plant collecting. In the feces and in the refuse there were two small fragments of what seemed to be domesticated plants. There were some peppers as well as some pumpkin seeds and there was a definite fragment of a pumpkin rind found within the refuse. In total I would guess that probably 50 per cent of these people's subsistence came from hunting and 50 per cent came from wild plant collecting with an infinitesimal amount coming from agriculture. The three or four feces remains examined would seem to hint that actually there was more plant collecting than hunting done by these people, but then again the meat remains are not quite so well preserved in the feces.

Besides these tools connected with subsistence we have some evidence of other activities as indicated by their material culture. The wooden atlatl fragment, the wooden fire tongs, and the number of whittled sticks seem to hint that one of their activities during their occupation in the cave was wood carving and the chipped stone gouge may have been one of the tools of their trade. Perhaps the most numerous items were connected with another activity, that of weaving. There were a number of strands of string, predominantly they were Z-twisted hard yarn that had been made into either two-yarn cord or two-cord rope. A minor variety is S-twisted

fragments, wrapped and filled with paper, some of which were
also chopsticks, paper chopsticks, and a few other
things, as well as some of the basket remains; all would
be connected with wild plant collection. In the faces and in
there were two small fragments of what seemed to be domesticated
There were some papers as well as some small sticks and other
definite fragments of a plant in the form of a leaf, within the refuse.
would guess that about 25 per cent of these people's subsistence
from hunting and 25 per cent came from wild plant collecting
indefinite amount coming from agriculture. The three or four
remains examined would seem to hint that actually there was no
collecting from trading done by these people, but then again it
remains are not quite as well preserved in the faces.



Tm c 248

Zone 4

etc 3

etc 6





hard yarn which has been made into either two-yarn cord or three-cord rope. Some of the string was tied by square knots and a Lark's Head knots. Some of this string has been woven into bags or baskets. Here the nets and bags are somewhat difficult to distinguish one from the other. There is a loop twine basket but it is sufficiently flexible and also so loose-knit that it would be perfectly justifiable to call this so-called basket a net bag. There also is a Fulgan-stitch-type basket. Beside these remains, in the beds and in a couple of the pits were a number of fragments of chequer-weave mats. There also is one very small fragment of a twilled mat. A few snail beads indicate that these people even at this early stage were using some ornaments.

Diagnostic of this horizon are the Infernillo points, the pointed base atlatle foreshaft, the pierced bone awl, the scrapers-graver objects, the disk chopper, the long digging stick, the fire tongue, the Fulgan bag, the loop twined basket or bag, and a one-over-one mat. All of these are good Infernillo traits. Most of the other traits are of a fairly general nature but also occur at other components of the Infernillo phase.

Fig. - Distribution of Zone H, Occupation 3
in Cave Tm c 248.

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Overlying much of the vegetable floor, Zone I, is a yellow ash layer. It appears in patches over the lower floor and actually seems to be some sort of an occupation. Much of it may have been dug away by peoples who excavated in the cave during Occupation 7 or 8 time period. The pollen from this layer have been analyzed and reveal that the layer was laid down during a wet period. Some carbon from Zone H has been analyzed and reveals the Carbon-14 date of 8,200 years ago \pm 400. Estimates of this relatively thin two to four inch thick layer of refuse reveal that it ~~is~~ composed about about 16 cubic feet of refuse. Much of it has been burned and it only appears in the east chamber. We were unable to discern any definite features extending down from this layer and we do not have a large amount of archaeological material from it. The relatively small area occupied in the cave seemed to indicate that we are dealing with a group somewhat smaller than the previous occupation, perhaps a micro band. However, the layer's thickness plus some of the vegetable material which include nuts and squash would seem to indicate that this small group occupied the cave probably for a whole season, perhaps a summer.

We have some indication of the subsistence pattern of these people. 149 identifiable bone fragments were uncovered and many of these had been split and scraped for marrow. Some bones of a deer, skunk and a bison also occurred in this layer. Artifacts connected with hunting are relatively rare and include some side-scrapers, small discoidal end-scrapers, and a fragment of what seems to be an Abasolo point. More numerous than the evidence of hunting are the evidence of wild plant collecting. There are 620 wild vegetable remains, many of them are agave, and a few of them are of opuntia. There are also a few pieces of tripsicum grass among these materials. There also are a fair number of implements that might

be connected with wild plant collecting including some baskets, a humped scraping plane, flake choppers, saw-like choppers, and a digging stick. Also, there is a little bit of evidence that these people used domesticated plants. The evidence consists of a few fragments of gourds and a few fragments of pumpkin. One of the feces also had what might be part of a pepper in among these remains. On the basis of both the plant material and the feces material found in the cave, we would guess that perhaps 75 per cent of this sustenance came from wild plant collecting and about 24 per cent from hunting, and perhaps one per cent from agriculture.

Other cultural material and activities and that of subsistence are fairly limited. Most of these seem to be connected with weaving. There were some soft S-twisted yarn made into two-yarn cord, some A-twisted hard yarn which was also made into two-yarn cord. Some of the string and yucca strand had been tied overhead knots and square knots. Some of the string also had been made into loop-twined baskets. Here I say baskets rather than basket-like nets in that the coil element of these loop-twined baskets is fairly rigid. There are two fragments of a one-over-one mat, and also in that level are a series of quartz crystals that the inhabitants seemed to have saved for some reasons or other.

On the basis of the Abasolo point, the one-over-one mat, the loop-twined basket as well as the subsistence pattern we have classified this third occupation as being a component of the Infernillo phase. Most of the artifacts that have been found in this layer, are of quite a general nature and are just as diagnostic of Ocampo as they are Infernillo.

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twisted basket as well as the subsistence pattern we have classified the
third occupation as being a component of the Infernillo phase. Most of

$T_m \sim 248$

Zone G

occupies 4

lines 5



be connected with plant collecting including some baskets, a plant
something like, like choppers, new-like choppers, and a little stick.
There is a little bit of evidence that these people used domesticated
plants. The evidence consists of a few fragments of gourds and a few
fragments of pumpkins. One of the feces also had what might be part of
a pepper in among these remains. On the basis of both the plant material
and the feces material found in the cave, we would guess that perhaps
75 per cent of this substance came from wild plant collecting and about
24 per cent from hunting, and perhaps one per cent from agriculture.

Other cultural material and activities and that of subsistence are

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nature and are just as diagnostic of Central as they are Interillio.

Fig. - Distribution of Zone G, Occupation 4
in Cave Tm c 248.

Overlying the yellowish layer of Occupation 3 is a more definite vegetable layer which is called Zone G, Occupation 4. This layer appears as a series of patches throughout the cave and is never more than a couple of inches thick. I greatly suspect, that much of the original extent of this layer has been disturbed by pits from Occupations 7 and 8. On the basis of the actual layer and the reconstructed total extent of the layer, there seem to have been 50 cubic feet of refuse. One pit full of vegetable material extended down from the layer. Due to its limited extent and relative thinness, we have guessed that a micro band laid down this layer in less than one season. The gourd and squash and bean remains seem to indicate that this season was during the late spring or early summer. Pollen from this layer has been analyzed and seems to indicate that these people occupied Zone G during a period that was as dry as the present.

52 bones, all unidentifiable, an Abasolo and a Tortugas point, and a small discoidal scraper are the only indications we have that these

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in Cave Tm c 248.

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extent of the layer, there seem to have been 50 cubic feet of refuse.
One full of vegetable material extended down from the layer. Due to
its limited extent and relative thinness, we have guessed that a ridge
had laid down this layer in less than one season. The ground was covered
and bean remains seem to indicate that this season was during the late
spring or early summer. Pollen from this layer has been analyzed and
seems to indicate that these people occupied Zone 5 during a period that
was as dry as the present.

52 bones, all unidentified, an abasco and a fortification point, and
a small official scraper are the only artifacts we have that these

people did any hunting. Much more numerous than the hunting remains are those of wild plant materials. We have 483 wild plant materials, mostly huapillas, agave and opuntia, as well as 16 pods of runner beans, 11 fragments of wild squash. The humped and flat scraping planes and the saw-like chopper may have been implements used to grind up these wild materials into some relatively palatable form. For the first time in this layer we have considerable evidence of agriculture. There are 23 rinds of pumpkin, 13 rinds of gourd, and in the feces seeds of both these plants. There also are seeds and pods of domesticated beans, both the yellow-seeded variety as well as the long red-brown variety. On the basis of these materials we have estimated that the subsistence pattern was about 75 per cent plant collecting, 20 per cent hunting, and 5 per cent agriculture. The few animal feces give a slightly different picture in that the majority of plant remains found in the feces are of cucurbitas. There are a few pods of either wild runner beans or domesticated beans, and three fragments of bone. On the basis of this it would appear that probably 50 or 60 per cent was wild plant collecting and 20 per cent agriculture and 20 per cent hunting. Again, I suspect that an average of what has been found in the feces and what definite evidence from animal and plant remains have been found would give us a more accurate estimate of just what the subsistence pattern was.

Other tools we have are not connected with subsistence, and some others have to do with the scraping of skin. A small discoidal scraper, side-scrapers, and perhaps the humped and flat scraping planes, would seem to indicate that while these people lived in the cave they did some skin scraping. However, their greatest activity during this brief occupation was in weaving. Hard and soft S-twisted yarns appear, and many of these have been twisted into two-yarn cord. There is a lesser

was about 75 per cent plant collecting, 20 per cent hunting,
cent percentages. The few animal bones give a slightly differ-
picture in that the majority of plant remains found in the fa-
eces are a few odd or others with minor amounts
of domesticated foods, and these fragments of bones. On the whole
it would appear that probably 50 or 60 per cent was wild plant
and 20 per cent percentages and 20 per cent hunting. Again,
that as a whole of what has been found in the faeces and what
evidence from animal and plant remains have been found would
more accurately say that of just what the subsistence pattern was.
Other foods we have not connected with subsistence.
Others have to do with the acquiring of skin. A small amount



Zone F

level 4



amount of Z-twisted hard yarn than soft yarn, which also has been S-twisted into two-yarn cord. Overhand knots appear on yucca strands, and Lark's Heads knots appear on the string. There also are two small fragments of mats, one is a one-over-one mat, while the other is a twilled mat.

The Abasolo and Tortugas points, humped and flat scraping planes and the dominance of S-twisted yarn as well as the subsistence pattern allow us to classify Zone G, Occupation 4, as being a component of the Ocampo phase. The other artifacts not mentioned are of a more general nature but tend to confirm our Ocampo classification.

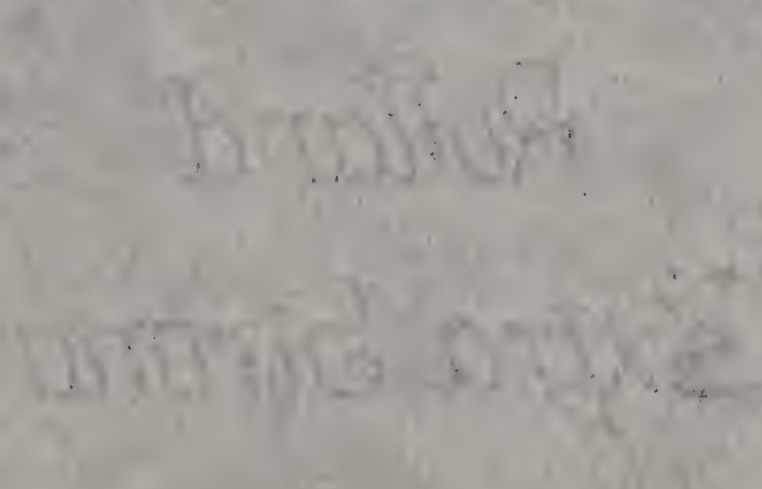


Fig. - Distribution in Zone F, Level 4
in Cave Tm c 248.

Overlying Zone G in most of the cave are small patches of grey ash, Zone F, Level 4. Some artifacts were found in this grey ash but these have been included as part of Occupation, Zone G. In actual fact this so-called grey ash layer is more than half composed of cave dust, and I believe represents a time when the cave was unoccupied during a dry period when cave dust and wind-blown sand and ash covered the earlier occupation deposit.



Zone E
Group 4 S
area 13

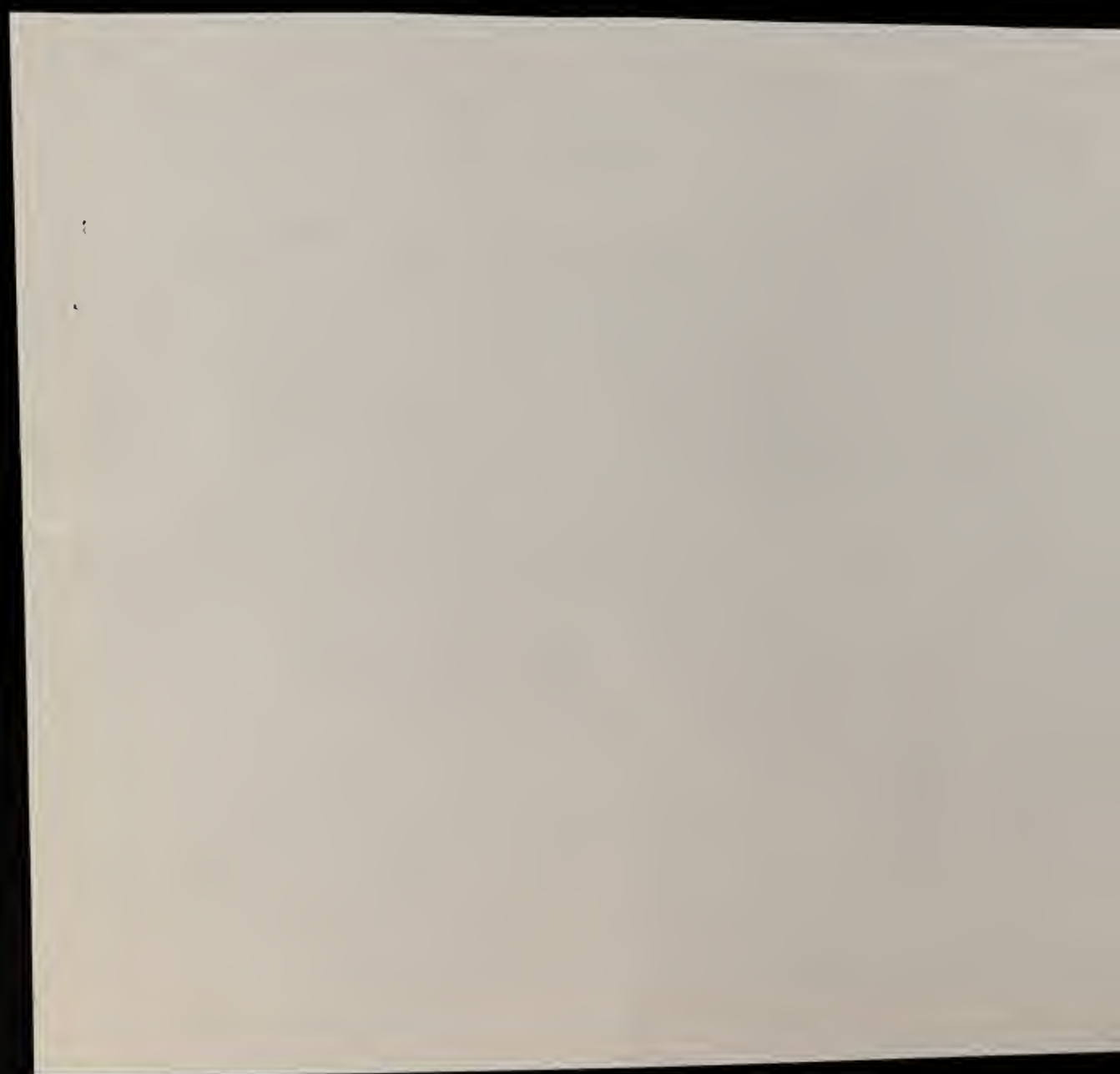


Fig. - Distribution of Zone E, Occupation 5
in Cave Tm c 248.

Overlying the grey ash was an extensive vegetable layer which varied from 1 to 3 inches thickness. This appeared as patches in the east chamber, but I suspect that once these patches were all connected and it was fairly continuous and quite a large layer. Based on this assumption we have estimated that Zone E, Occupation 5, had about 80 cubic feet of refuse in it. Extending down from this layer were two pits filled with vegetable material and one of them had mats associated with it. There also were in this layer a number of burned patches and a few fragments of fire-cracked rock, that might indicate hearth areas. On the basis of the relatively great size of the area occupied, I would estimate that we are dealing with a macro band who lived in the cave for a season. Pollen analysis has been done on some of the soils of Zone E and reveals that we are dealing with a dry period. A few sticks have been analyzed by Carbon-14 analysis and reveal a date of $5,650 \pm 350$ years ago.

470

A large amount of the remains that can be connected with their subsistence patterns were uncovered in this layer. 46 unidentifiable bones were uncovered. However, more and better evidence that these people hunted comes from the artifacts that occurred in the layer. These include an Abasolo projectile point, a pointed based atlatl foreshaft, a large end-scraper, thick and thin side-scrappers, small disc scrapers, and conical and split wedges. However, the predominant activity in the subsistence line of these people seems to have been plant collecting. There are 805 vegetable remains that were identified and these include ten pods of wild runner beans and some pollen of panicum. Humped and flat scraping planes, scraper gravers, disk choppers and saw-like choppers as well as various bags may have been implements used in collecting wild plant remains. The evidence of the use of domesticated plants is relatively slim. It consists of only a few specimens of pumpkins and gourds. Thus I would guess that probably 80 per cent of their subsistence was based on wild plant collecting, about 18 per cent of hunting, and around 2 per cent on domesticated plants. These estimates based on food stuffs are in radical variance with our evidence from four feces. In the feces we found considerable evidence of peppers, some bean~~x~~ remains that probably are domesticated, a small amount of wild plant material, mainly pods of the wild runner beans, and some animal tissue. Also rather surprisingly we found corn silk and corn pollen. An estimate of their subsistence pattern based on feces would seem to indicate that perhaps 25 per cent of their subsistence came from domesticated plants, 50 to 60 per cent from wild plant collecting, and the remaining 15 or 25 per cent from hunting.

Other activities which these people seem to have done while in the cave was the scraping of skins. The numerous scrapers and the conical

A large amount of the remains that can be compared with their size and shape were uncovered in this layer. As indicated by the evidence, however, more will be found in the future. These remains come from the artifacts that occurred in the layer. These include an obsidian projectile point, a pointed arrow shaft, a large end-scraper, thick and thin side-scraper, small end-scraper, and several other artifacts. However, the predominant activity in the subsistence line of these remains seems to be from plant collection. There are also remains of animal remains that were identified as being from the wild runner beans and some pollen of bananas, papaya and first cooking beans, sugar cane, duck, chicken and some other. Choppers as well as various bags have been in the past used in collecting wild plant remains. The evidence of the use of domesticated plants is relatively slim. It consists of only a few specimens of pumpkins and gourds. This would mean that probably 50 per cent of their subsistence was based on wild plant collection, about 18 per cent of hunting, and around 3 per cent on domesticated plants. These estimates based on food stuffs are in general in line with our evidence from four faces. In the faces we found considerable evidence of papers, some bark remains that probably are domesticated, a small amount of wild plant material, mainly seeds of the wild runner beans, and some animal remains. Also rather surprisingly we found corn cobs and some pollen. An estimate of their subsistence pattern based on faces would seem to indicate that nearly 25 per cent of their subsistence came from domesticated plants, 50 to 60 per cent from wild plant collection, and the remaining 15 or 20 per cent from hunting.

Other activities which these people seem to have done while in the cave was the scraping of skins. The numerous scraps and the small

and split wedges that might have been used for tying down skins certainly would be ample evidence of this. The gouge, the various pieces of whittled and cut wood as well as the atlatl foreshaft and the wedges themselves would also seem to say that they did some woodworking. A fragment of an abrading stone also may have been used for polishing of wood. The dominant activity, however, seems to have been connected with weaving and here we have a wide variety of material. The most numerous is the string. There are Z-twist two-yarn cord and two-cord rope, there is hard S-twisted yarn made into two-yarn cord and there are a number of fibres of just simple Z and S-twist soft yarn. These strings and various yucca fibres have been tied into overhand knots and Lark's heads knots as well as square knots. Some of the string had been used to make a simple coiled bag. However, the making of mats and mat-like bags or baskets was a very important activity. Yucca fibres have been used to make the three-over-three type mat, and there were also simple twilled mats with two-over-two weave. Many of these mats with various kinds of borders have been folden and sewn up at their two edges so they became baskets. One of these baskets had a three-over-three center section and a two-over-two twilled side section; another had just exactly the opposite with a two-over-two center section and a three-over-three strip down the sides. There was another one which had two-over-two center, then a single line made three-over-two weave and then a two-over-two twilled strip along its edges. There also was one basket which looked to have been of a relatively square shape, made by simple twilling. None of the other complicated coil baskets seem to have occurred at this time. Besides basket making, they seem to have made some beads out of snail shells.

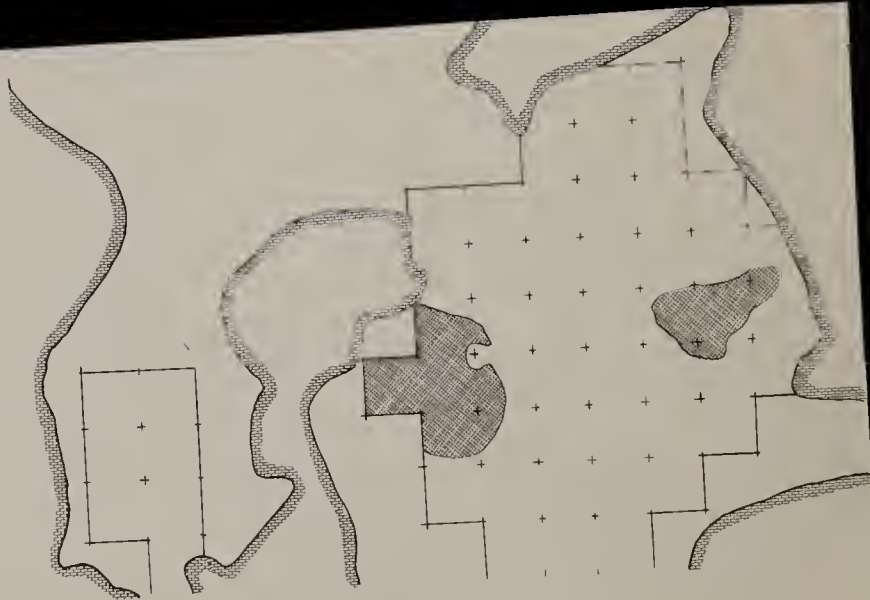
In term of diagnostic traits the Abasolo point, the small disk

are a number of things of just single 2 and 3-1 that I find. These
strings and various things have been tied into overhand knots and
Lark's heads knots as well as square knots. Some of the string had
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center, then a single line made three-over-two weaves and then a two-over-
two twilled strip along its edges. There also was one basket which
looked to have been of a relatively square shape, made by simple twill
None of the other complicated coil baskets seem to have occurred at this
time. Bigger baskets, being, they seem to have made some beads out of

Zone C

acc. 6

level 3+





scrapers, the humped and flat scraping plane, the scraper graver, the gouge, the abrading stone and the various kinds of twilled or twilled bordered baskets and mats, seem to indicate that Occupation 5, Zone E is a component of the Ocampo phase. The subsistence pattern tends to confirm such classification.

Overlying Zone E in a few spots and always underlying another vegetable layer, Zone C, Occupation 6, was a white ash layer. This white stratum was more than half composed of cave dust and seems to represent a time when the cave was not occupied.

Fig. - Distribution of Zone C, Occupation 6
in Cave Tm c 248.

Overlying the white ash layer in various patches throughout the cave was Zone C, Occupation 6, a relatively thin vegetable layer. In many cases this layer was confused during excavation with Zone E, Occupation 5. However, it seems to be definitely separated from it and in all cases over it. The layer itself has been badly destroyed by pitting from above and even a rather generous estimate would not allow it more than 25 cubic feet of refuse. Thus I would guess that it represents an occupation for less than a season by a micro band.

and the other two, which are also in the same
category, are the same as the first two, but
the third one is a little different. It is
a little more complicated, but it is still
in the same category.

The first two are the same as the first two,
but the third one is a little different. It is
a little more complicated, but it is still
in the same category.

The first two are the same as the first two,
but the third one is a little different. It is
a little more complicated, but it is still
in the same category.

Vegetable material reveals that again we seem to be entering a period that was slightly more wet than at present. Some of these vegetable materials have been dated as 3,945 years ago. ± 334

$\frac{1953}{1995}$

Materials giving indication of the subsistence pattern are extremely numerous. There were 201 unidentifiable bones and one bone definitely from a deer. With these bone remains representing hunting there are also some possible hunting tools such as the Abasolo point, an atlatl mainshaft, a flat based atlatl foreshaft, and three Gary stemmed points, as well as a cane knife and a piece of a spring trap. These hunting indications, however, are insignificant when compared with the wild plant remains, which had 3,100 vegetable remains including wild squash, wild bean, tripsicum grass, panicum and amoranth. The only tools besides obvious baskets would be connected with plant collecting, were the humped back scraper and a saw-like chopper. A number of domesticated plants were used including peppers, yellow-seeded common beans, squash, gourds, and a few cobs of corn. In terms of counts of food stuff it would seem that we have a horizon that is about 80 per cent based on wild plant collecting, perhaps 10 per cent on agriculture, and 10 per cent on hunting. Four feces from this horizon have been examined and give a very different picture. Two of the feces have beans and bean pod remains in them. This could be either wild or domesticated beans. The other two feces, however, have corn and beans in them and the final one has quite a bit of corn, pepper, domesticated beans and some panicum. On the basis of these materials it would seem that probably 60 per cent of their subsistence was gained from wild plants and the other 40 from domesticated plants. Again I suspect that an average of the feces estimate against food stuff estimate would give us a fairly true picture. This would reveal that there is about 70 per cent of their diet from wild plants,

25 per cent from domesticated plants, and 5 per cent from hunting.

Beside subsistence activities, skin scraping and skin preparation seems to have been one of the things they did in the cave. The hammered split wedges, the antler piercer, the scrapers and the knife, all could have been connected with the preparation of skins. The chiseled scraper-like mano also may have been used on them. As with the previous horizons, weaving is very important. There are mainly S-twisted yarns in this horizon but there are a few strands of Z-twisted yarns, some of these made into two-yarn cord. Overhand knots and square knots tie up some of this string or rope or cord, as well as yucca strands. Much of these strings occurs with a simple loop net. There, however, is also a piece of a Fulgan basket made on a very solid foundation that is somewhat different than anything we have. Twilled mats are the predominant form; one mat with a three-over-three border and a twilled center had been made into a basket like the previous Ocampo horizon.

The Gary stemmed points, the flat atlatl foreshaft, the solid foundation Fulgan basket, the dominance of twilled mats, and the subsistence pattern, as well as the archaeological data would seem to indicate that this horizon, Occupation 6, is a component of the Flacco phase. Many of the traits, of course, are a continuation from Ocampo, but there are enough significant differences to keep it from them, classified as Ocampo.

(continued)

Classified as Confidential

Fig. - Distribution of Zone B, Occupation 7
in Cave Tm c 248.

In both the west and east chamber of the cave overlying the early deposits was a thick layer of grey ash with occasional burned patches in it and occasional vegetable layers. This is called Zone B, and seems to represent Occupation 7. Actually it may have been a number of individual occupations that we are unable to discern because the vegetable material is not as well preserved. There also is considerable evidence in terms of the disturbance of the lower layers that the people of Occupation 7 were pitting in the earlier layers and bringing up earlier materials as well as destroying their own floor levels. In terms of the total refuse there are over 900 cubic feet of refuse in this Zone B. On the basis of this plus the numerous burned areas that might be hearths, I would suspect that Occupation 7, whether one or more, was by a macro band for more than a single season. In this large layer there was considerable evidence of hunting. There were 1,143 unidentifiable cracked, split and burned animal bones. There also were identifiable animal bones of buffalo, deer, gopher, possum, mouse and birds. Artifacts that might be connected with the hunt are extremely numerous. They include a whole series of projectile points which I will briefly enumerate: the Palmillas,

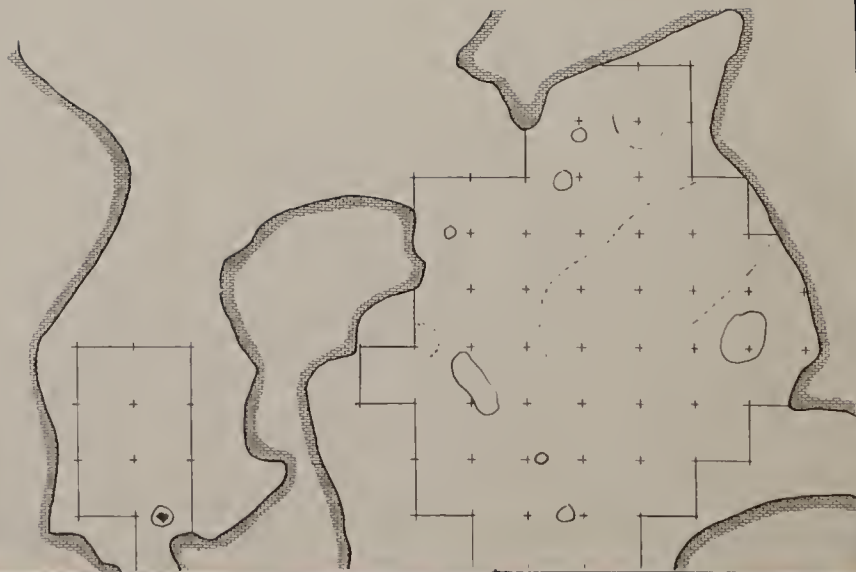
series of projectile points which I will briefly summarize: the main
connected with the point are extremely numerous. They include a whole
of buffalo, deer, gopher, beaver, mouse and birds. Artifacts that with
a list and dated animal bones. There also were identifiable animal bones
siderable evidence of hunting. There were 1,143 identifiable bones
tant for more than a single season. In this large lot there was con-
I would suspect that Occupation V, whether one or more, was by a micro
the basis of this plan the numerous bones that might be human,
total refuse there are over 500 cubic feet of refuse in this Zone V. In
materials as well as describing their own floor levels. In terms of the
Occupation V were fitting in the earlier layers and bringing up earlier
terms of the distance of the lower layers that the people of

is not as well preserved. There also is considerable evidence in
occupations that we are unable to discern because the vegetable material
to the present Occupation V. Actually it may have been a number of individual
in it and occupation I vegetable layers. This is called Zone I, and seen

Jan 13

acc 7

level 2





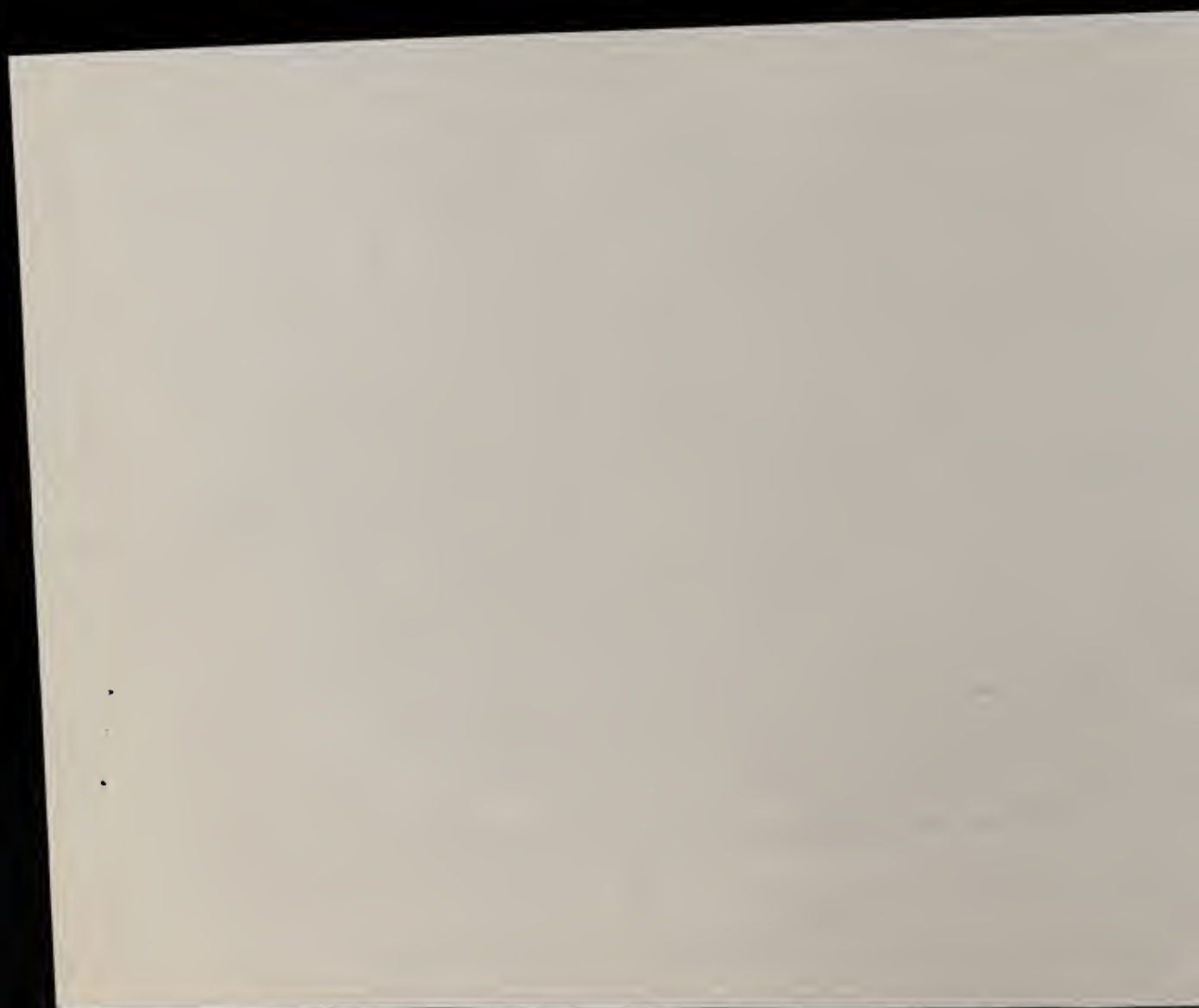
San Lorenzo, Catan, Matamores, Gary, Flacco, Nogales, Tortiga, El Magre, Abasolo and Infernillo points occur in this level. All, except the San Lorenzo and possibly the Catan and Matamores points, would be considered to be atlatl points, them being arrow points. There also are atlatl mainshafts, arrow mainshafts, fragments of bows and part of a spring trap. Other objects that might be indirectly connected with animal remains are the bone needle and ore, the scraper handle, the conical and split wedges, the thin and thick scrapers, the elongate scrapers, the small chipped disks, the crudely chipped medium disk scrapers, the triangular end scrapers, the chipped drill, the small chipped, bifacial disk, and chipped knives. Thus there is, on the basis of the remains, further evidence that at this time this macro band probably was staying in the cave through a number of months, perhaps using the cave as a base for doing some hunting. Vegetable material is still, however, quite numerous and there were over 2,000 plant remains. Many of these are desert type plants such as huapilla, opuntia and agave. However, there are a number of fragments of wild runner beans and wild squashes. Artifacts that can be connected with this plant collecting are less numerous. There are the baskets and bags. There are also humped and flat scraping planes, scraper gravers, large chipped disks and pebble choppers, and saw-like choppers. Agricultural remains represent another big section. These include gourds, pumpkin, warty squash, and pepper seeds; at least two varieties of beans, lima beans, corn and some cotton seeds. There were also some cigarette butts. The pottery, of course, could have been used to cook some of these plant remains in. A few feces occurred and they reveal that about one third of the eating materials was meat and the other third wild plant, and the remaining third was domesticated plant remains. This is more or less in agreement with the preserved food stuff remains except that it gives more emphasis to hunting .

In terms of cultural activities other than subsistence, as we pointed out, there is considerable evidence that these people were scraping skins. The needles and awls and the choppers and scrapers, and so forth, are that evidence. There also are a couple of celts in here which indicate some wood work. The antler flaker and the many flint chips would indicate that they were making projectile points. Two other activities are important, one is weaving. Great quantities of string appeared throughout Zone B. Most of it is S-twisted soft-fibre yarn; this is made into various kinds of cord and rope. There were little amounts of Z-twisted cotton yarn. However, these were a minority. Pieces of yucca and the string were tied into various overhand, square and granny knots, and there were a couple of pieces of fibre that had been woven into yucca rings. There also were a couple of carrying loops. A number of baskets of both the bowl and pan shape were made and these are all of the split stitch bundle foundation variety. Twilled mats occurred and are usually square and quite large, the sort that could be used for bedding. There is one difference/earlier ones in that the decoration in these is done by weaving different coloured elements through the mat. Other activities which have an aesthetic implication are the shell and bone beads that appeared in the refuse. Pottery is not overly numerous and is mainly Ocampo corrugated, though San Lorenzo smooth and San Lorenzo black appear. There is one small piece of San Lorenzo engraved, and there also is a cherd of Palmillas engraved. In a deep pit in the west chamber a burial wrapped in two brightly coloured twilled mats occurred. Though it was in roughly the same position and in some sort of bundles as our earlier Mesa de Guaje burial, it had none of the latter's numerous features, and it was relatively simple. Thus beside occupying the two caves, these San Lorenzo people also put a burial in their occupation and refuse.

There is also a considerable number of plants of both the low and high shape which are
all of the slight stunted round formation variety. This is
and the leaves are small and quite large, the sort that could
be used for the purpose of making a good fire.
There is also a considerable number of plants in the
shape of a low bushy plant with small leaves
of a few inches which have an aesthetic appearance and are
quite different in the shape. There is also a
small bushy plant, though not so common as the
others. There is also a small plant of the same shape
and is a kind of the same shape. It is described in the
book as being in the shape of a small bushy plant
and is roughly the same shape and in some sort of
shape as the other plants. It is described in the book as

Zone A
acc 5'
level 1





In terms of cultural affiliation I suspect many of the artifacts found in this layer might have been dug up from earlier horizons. There are, however, a number that are definitely diagnostic of the San Lorenzo phase and these include the San Lorenzo pottery types, both the smooth, brushed, and black engraved, the Ocampo corrugated ware, the San Lorenzo points, triangular end scrapers, the small bifacially chipped disks and drills, as well as the twilled bi-chrome mat. Thus Zone B, Occupation 7, becomes another component of the San Lorenzo phase.

Fig. - Distribution of Zone A, Occupation 8,
in Cave Tm c 248.

Overlying the interior of the cave in the west chamber was a brownish layer often with well preserved vegetable material in it. This and part of the top layer of the more frontal part of the cave, is considered to be Zone A, Occupation 8. This layer covers a considerable part of the cave and varies between one and six inches in thickness. There are three pits that have been dug down from and a number of areas that had mats in them on top of grass; they probably were beds. On the basis of the large extent of the area, about 600 cubic feet, as well as the numerous beds, I would suspect that this

represents an occupation by a macro band for at least a season. Pollen and floral material indicate the climate was almost exactly as it is today.

Subsistence pattern data is fairly good. 128 unidentifiable split, burned and broken bones were found. Artifacts that might be connected with the hunt were the Palmillas, Catan, Matamores, Gery, Tortugas, Nogales, Almagre, and Infernillo atlatl points as well as the Fresno and Starr arrow fragments and an arrow shaft. There also was a trigger from a trap and a couple of spring traps. Winged flint drills, small disks, small bi-facial disks, thick and thin side scrapers and elongate end scrapers could have been used to prepare the skins of animals taken in the hunt. Much more numerous than the animal bones were the wild plant materials, and here 1,360 remains were uncovered. Many of these are runner beans, but again they are a great deal outnumbered by desert plants such as yucca, agave, and huapillas. Pebble manos, the clay and stone pestles, the humped and flat scraping planes, and the saw-like choppers may have been used to prepare these wild food stuffs. Agricultural remains are fairly numerous and there are a number of cobs of corn. There are a few peppers and a couple of walnut and pumpkin seeds. There also are some cigarettes and a few pods of the red-brown type of common bean. Estimates based on preserved food stuff would seem to indicate that perhaps 60 per cent of their diet came from wild food plants, about 30 per cent from agriculture and 10 per cent from hunting. Feces again give a slightly different picture, with about 40 per cent seemingly coming from agriculture, 40 per cent from wild food plant collecting, and 20 per cent from hunting. There are a number of other activities indicated by various artifacts in this top level. The celt and part of a gouge, the incomplete fire tongue and

the incomplete shafts of arrows and atlatls would seem to indicate that some wood working was undertaken. A long pointed stick is also evidence of wood-working, and the stick may have been used for corn planting. Split wedges and conical wedges, the various scrapers as well as the leather thong seem to show that some skin preparation was done during this occupation. Weaving again is an important industry. Most of the string is S-twisted soft fibre yarn, which is made into various kinds of cords and rope. There is also quite a large amount of Z-twisted cotton, probably made on a spindle whorl. Overhand and square knots occur on the string as well as on yucca. There is some plain-weave cotton cloth, a one-over-one twilled mat, a two-over-two twilled mat, and a large twilled palm leaf basket-like implement. There is a fragment of a bow drill and also pierced shell and stone beads that may have been drilled by drill. There is a wooden flute and a paint stone and one piece of mat that seems to be painted. However, probably most of the painting was done with the pottery. Here there is a wide variety, but particularly interesting are the San Antonio red polished ware. There are many sherds of San Lorenzo general type ware, as well as a few of Palmillas.

In terms of cultural affiliation the winged drill, the Fresno and Starr points, the San Antonio red and polished pottery, as well as the bow drill and some of the plain weave cotton would seem to indicate that here we are dealing with a component of the San Antonio phase. As might be expected in the top layer, particularly in a cave that has been pitted by treasure hunters as well as by the aborigines there are many artifacts that are like the earlier horizons. Some of these may have been dug up while others may be cultural continuities.

Summary

The incomplete shafts of arrows and flint would seem to indicate that some work was undertaken. A long pointed stick is also evidence of wood-working, and the sickle has been used for corn harvesting. Split wedges and conical wedges, the various carvers as well as the latter things seem to show that some skin preparation was done during this occupation. A variety of arrowheads is an important industry. Most of the arrowheads are of twisted soft flint, which is made into various kinds of carvers and tools. There is also a large amount of twisted cotton, probably made from the same flint. Overlaid on a same knot occur on the shafts as well as on the heads. There is also a large amount of one-over-one twisted flint, a two-over-two twisted flint, and a large twisted flint. There is a fragment of a bow drill and also pierced shell and stone beads that may have been drilled by drill. There is a wooden flute and a point stone and one piece of flint that seems to be painted. However, probably most of the painting was done with the pottery. Here there is a wide variety, but particularly interesting are the San Antonio red polished ware. There are many shards of San Antonio general type ware, as well as a few of Pinalia.

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CHAPTER II - Section II

Valenzuela's Cave (Tm c 248)

by David Kelley

Introduction

The study of these materials was partly supported by a grant from Harvard University (CHECK with Willey just how he wishes this acknowledgment made).

Tm c 248, or Valenzuela's Cave as we have called it, is a two-chambered cave located in the Penal de la Virgen (popularly called Flacco) tributary of Infernillo canyon in the Sierra Azul, north of Ocampo, Tamaulipas. Geologically, this limestone area, honeycombed with caves, belongs to the coastal zone, but physiographically it is one of the lesser ranges of the Sierra Madre. This cave is one of a series occupying nearly the same height above the canyon floor, apparently formed due to a slightly softer layer in the limestone. Portions of Tm c 248 lie directly under portions of Tm c 247, which makes the relationship between the two beds of gravel which form their respective floors rather puzzling.

The cave is somewhat more sheltered than Tm c 247, and remained pleasantly cool on hot days. The remarkable preservation of vegetable materials is sufficient to attest that most parts of the cave were free from excessive moisture, although there was some seepage in one corner. The cave is on the south side of the canyon, with one of its two entrances facing nearly north and the other approximately west by north (see map).

OBSCLETE

CHAPTER II - Section II

Valencuela's Cave (Tm c 343)

by David L. Bailey

Introduction

The study of these materials was partly supported by a grant from Harvard University (OSR 5008) with which I am most grateful to acknowledge the assistance of Dr. J. H. Steward.

Tm c 343, or Valencuela's Cave as we have called it, is a two-chambered cave located in the Páramo de la Virgen (popularly called El Páramo) in the Páramo de la Virgen, north of Bogotá, Colombia. Geologically, this limestone area, honeycombed with caves, belongs to the coastal zone, but physiographically it is one of the higher ranges of the Sierra Nevada. This cave is one of a series of caves lying along the same height above the canyon floor, apparently formed by the same slightly softer layer in the limestone. Portions of Tm c 343 lie directly under portions of Tm c 344, which was the relation ship between the two beds of gravel which form their respective floors with the gravel.

The cave is somewhat more sheltered than Tm c 344, and retained pleasantly cool on hot days. The remarkable preservation of vegetable materials is sufficient to attest that most parts of the cave were free from excessive moisture, although there was some seepage in one corner. The cave is on the south side of the canyon, with one of its two entrances facing nearly north and the other approximately west by north (see map).

The two chambers (which are connected by a passageway in the rear) have been called for ease of reference the east chamber and the west chamber, as they would have been if oriented along the canyon, although in fact their compass directions do not warrant the terms. The conventional directions N, S, E, and W in which the squares were laid out are similarly modified from the true directions, which can easily be determined from the map. The west chamber is considerably higher and narrower than the east chamber, and opens more directly onto the canyon. It is less protected than the east chamber, but lighter and more cheerful. The east chamber has a low roof, so that we and several of our workmen bumped our heads on it on different occasions. At the time of the first occupation, when the deposits had not yet been laid down, the floor was enough lower so that this would not have occurred, but it must occasionally have bothered the inhabitants during the latest occupation period.

Excavation

The excavation was the first that Kelley directed, and his previous field experience was limited to assisting in Tm c 247, some participation in a student dig at Teotihuacan, and a summer digging as workman in the Roman and Anglo-Saxon sites at Southampton, England. The workmen were without experience, except for two who had aided in the excavation of Tm c 247. With these drawbacks, a number of mistakes were made, mostly involving insufficient recording of data, and often becoming apparent to us only during the analysis of materials. During the first half of the dig, the correlations of levels from one square to another were not always adequate; at that time, a standard series of levels was adopted, as the general sequence of the stratigraphy had become clear, and we

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believe that the squares dug subsequently were correlated as adequately as was possible. Profiles were not always drawn as soon as a square was dug, but were left for later when the profiles themselves were left, since the men were digging faster than Kelley could keep up with them and at the time, operating on a rather meagre budget, it seemed to him inadvisable to leave them idle for long periods while he drew up profiles.

Thus Kelley would now^c draw up the profiles and let them wait, but at the time^t the presence of the actual profiles in the ground seemed sufficient. He had not then fully realized possible difficulties in correlating such profiles with square descriptions done at a different time.

The entire cave was divided into five-foot squares, marked off by wooden stakes. The squares were named after the stake in their SE corner which in turn was measured in conventionally determined directions N, E, S, and W of a zero stake. Both east and west chambers were measured from this zero stake. The first square dug, N10 E5, Kelley did himself in order to demonstrate to his new workmen what he wanted done. This square was dug by arbitrary levels. All other squares were dug by natural levels, with the exception that certain large pits from what was later called Level 2, including sometimes more than a complete square, were not originally recognized as pits and were dug by arbitrary levels, as natural levels were not apparent in them. Profiles were normally drawn only at five-foot intervals, and artifacts located only by square and level, although the actual digging unit was about one third of a square, and profiles were cleaned at such points before proceeding with the square. No attempt was made to establish sub-divisions within the gravel, although it was cleared one shovel's depth at a time, roughly, so that some estimate could be made as to whether an artifact

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was near the top of the gravel or 'well down in', that is more than one shovel's length down, normally. All materials were screened, and the workmen were instructed to save many dubious artifacts and plant materials on the presumption that it was better to have things and decide to throw them away than to wish that you had saved things which were discarded. Even so, it is probably that many of the cruder stone tools were discarded. Only distribution analysis sufficed to convince us that some of my tool types really were artifacts. Our seven workmen alternated between digging and screening, with one man moving back dirt each day. All domestic plants and all plants which showed signs of having been used as food were saved in all squares, and all vegetable materials from some squares were saved. All bones were also saved.

The plan of excavation was to end up with three trenches, running north and south and connected by a cross trench on the north of the cave running east and west. This was done, and left standing parallel profiles at five-foot intervals across the cave, which were very helpful in correlating the levels. They were finished about half-way through the dig, and at this time the first batch of artifacts was taken out from the cave. Up to this time we had been packing the materials decidedly haphazardly, only making certain that level and square labels accompanied each bag of artifacts and/or vegetable remains, and only separating the most fragile artifacts, such as mats, from the vegetable materials. A twenty-mile (or more) trip with the artifacts loaded on mule back and often swaying distressingly convinced us that this was not the best way to transport artifacts, and that artifacts which were to be transported in this fashion (as they had to be) had better be more carefully packed.

On returning to the cave, Kelley set up the system of eight levels by which the remainder of the cave was dug. At the same time, he decided

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to wash and number all stone artifacts and potsherds as they were excavated. The photographic record was decidedly skimpy, but in most cases there seemed no reason for photographs, except a punctilious regard for the record. Kelley does not believe additional photographs would have aided the analysis at any point where it would conceivably have occurred to him to take them. Most of the photographs were taken by Peter P. Pratt when he came out to the cave near the end of the excavations, although Kelley had one camera with him for use in case of possible burials.

In spite of these errors of procedure and occasional mishaps, we do not believe the analysis has suffered particularly from them. Generally speaking, in correlating the profiles, when a level in a square was rich enough so that several artifacts were found in it, it was distinctive enough so that it could satisfactorily be correlated with other squares. In only one case was there doubt as to whether a level belonged to the pre-Ceramic or Ceramic periods from its stratigraphic position, and in that case the complete absence of corn or pottery in a rich vegetable layer was sufficient evidence that the layer belonged to the pre-Ceramic periods. In most cases, the problems at issue are whether a particular level correlates with the general Level 3 or Level 5 in one case, or whether it is Level 5 or Level 7 in another. In one square a particular level may be Level 3, 5 or 7, but this is surrounded by pits from Level 2 which would have made it nearly impossible to determine in any case. In case of doubt, artifacts have been classed with the higher of two possible levels, as the frequent pitting from Level 2 made this a factor which had to be allowed for in analysis in any case. The accompanying table of correspondences of the levels in the different squares is the one which was used in analyzing

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the artifact distributions. I believe that its probably occasional inaccuracies are not such as to seriously affect the analysis. To spend hours of work attempting to iron out the minor discrepancies between two profiles when the result would affect at most one or two artifacts seemed a disproportionate effort.

A preliminary analysis was done with MacNeish in Cambridge at Easter time, 1955. This analysis, because MacNeish had studied the other caves, was a great help to Kelley, particularly with regard to the stone artifacts, although we have since departed from it at a number of points.

The second analysis was undertaken by laying out all the artifacts by levels and then examining them minutely for likenesses and differences. When types were tentatively roughed out, chi squares were done on some of them to see if the distributions differed significantly. Naturally, two validly distinct types may have the same distribution, but a significant difference in distribution is usually a fairly good indication that the distinction between the types is valid. One surprisingly helpful result of this was the realization that the west chamber provided a test of the amount of pitting done in the east chamber, and its affect upon the artifact assemblage. The west chamber contained only deposits of the ceramic periods and of the gravels, so that the people had none of the earlier deposits to dig pits into. This means that an artifact type which is found in abundance in the Level 2 ceramic deposits of the east chamber, or on the surface, and which is completely lacking in the west chamber has probably been dug up from the earlier deposits, which the abundant pits make likely.

The final analysis was done after all the vegetable and artifact types of the whole area had been established and the cultural complexes

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The final analysis was done after all the vegetable and artifact types of the whole area had been established and the cultural complexes

delineated. MacNeish then redrew, numbered and named the various zones, floors and occupations in accordance with a system that he had established for the other two caves. He then attempted to correlate this material and Kelley checked and corrected his results. In gross outline the stratigraphy, levels, layers, occupations and cultures were as follows:

Zone A	- top vegetable or brown stratum	- Occupation 8 (Level 1)	- San Antonio
Zone B	- gray ash	- Occupation 7 (Level 2, 2a, 2b and 2c)	- San Lorenzo
Zone C	- vegetable	- Occupation 6 (Level 3 in Squares E25, E20, and S5W5)	- Flacco
Zone D	- white ash		?
Zone E	- vegetable	- Occupation 5 (Level 3 except above)	- Ocampo
Zone F	- gray ash	(Level 4)	- Ocampo
Zone G	- vegetable	- Occupation 4 (Level 5)	- Ocampo
Zone H	- yellow ash	- Occupation 3 (Level 6)	- Infernillo
Zone I	- lower vegetable	- Occupation 2 (Level 7)	- Infernillo
Zone J	- gravel	- Occupation 1 (Level 8)	- Infernillo

defined. MacMillan then reviewed, numbered and named the various zones, floors and occupations in accordance with a system that he had established for the other two caves. He then attempted to correlate this material and Kelley checked and corrected his results. In gross outline the stratigraphy, levels, layers, occupations and cultures were as follows:

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Zone F - gray ash	(Level 4)	- Ocampo
Zone G - vegetable	- Occupation 4 (Level 5)	- Ocampo
Zone H - yellow ash	- Occupation 3 (Level 6)	- Intermillo
Zone I - lower vegetable	- Occupation 2 (Level 7)	- Intermillo
Zone J - gravel	- Occupation 1 (Level 8)	- Intermillo

Fig. - Cross-section drawings of the East Chamber
of Cave Tm c 248.

Fig. - Cross-section drawings of the East Chamber
of Cave No. 248.

Overlying the limestone floor of the cave in both the east and west chamber, was a thick layer of gravel. Datum depth reveal that the top of this thick layer of gravel is slightly lower in elevation in the west chamber than in the east chamber. Both these layers of gravel, of course, are on a different height than the gravel in cave Tm c 247 and in cave Tm c 274. There also is a different thickness of this layer of gravel between the east and west chamber of Tm c 248. In Tm c 248 west chamber this layer of gravel varies from two feet to almost four feet in thickness, while in the east chamber it sometimes is only a few inches thick or does not appear at all and never is much more than two feet in thickness. Also, in the east chamber the gravel is thicker in the south end of the cave than in the north, that is, thicker in the interior, and there is a slight tendency for the top of the gravel to be on a slightly higher elevation along the side walls of this chamber. All these factors lead me to the conclusion that this layer of gravel was deposited by a stream that ran through the cave, carrying gravel with it, and somehow brought the gravel down ^{through an opening} from the ~~assumed(?)~~ underground passage from the Mesa above and deposited it on the floor of the cave. Also these factors of the gravel, which we have just spoken about, would tend to be strong evidence against its having been deposited by the stream at the bottom of the arroya, 300 feet below the mouth of the cave. We still do not know where it got the gravel from on top of the Mesa, and exactly what passage it went through, but this seems to be the most logical explanation that we found for it. Obviously, the gravel, called Zone G, was deposited during a wet period.

In a few spots in the top six inches of the gravel we found twelve artifacts and 86 fragments of bone. There seems to be little doubt that these are in the gravel and not intrusive into it, and I cannot help but

Overlying the limestone floor of the cave in both the east and west chamber, was a thick layer of gravel. Datum depth reveal that the top of this thick layer of gravel is slightly lower in elevation in the west chamber than in the east chamber. Both these layers of gravel, of course, are on a different height than the gravel in cave Tm c 247 and in cave Tm c 244. There also is a different thickness of this layer of gravel between the east and west chamber of Tm c 248. In Tm c 248 west chamber this layer of gravel varies from two feet to almost four feet in thickness, while in the east chamber it sometimes is only a few inches thick or does not appear at all and never is much more than two feet in thickness. Also, in the east chamber the gravel is thicker in the south end of the cave than in the north, that is, thicker in the interior, and there is a slight tendency for the top of the gravel to be on a slightly higher elevation along the side walls of this chamber. All these factors lead me to the conclusion that this layer of gravel was deposited by a stream that ran through the cave, carrying gravel with it, and somehow brought the gravel down from the assumed(?) underground passage from the Mass above and deposited it on the floor of the cave. Also these factors of the gravel, which we have just spoken about, would tend to be strong evidence against its having been deposited by the stream at the bottom of the arroyo, 300 feet below the mouth of the cave. We still do not know where it got the gravel from on top of the Mass, and exactly what passage it went through, but this seems to be the most logical explanation that we found for it. Obviously, the gravel, called Zone C, was deposited during a wet period. In a few spots in the top six inches of the gravel we found twelve artifacts and 86 fragments of bone. There seems to be little doubt that these are in the gravel and not intrusive into it, and I cannot help but

believe that this represents an occupation, Occupation 1, that was deposited before the final period of deposition of the gravel. Exactly what sort of an occupation this first one was, cannot be determined because the gravel deposition had almost completely destroyed the original floor. However, from the artifacts, the bones and the little vegetable material we can tell something about the subsistence pattern of these people. There were 86 bones as well as a number of implements that might somehow be connected with hunting. The Infernillo points, the thin and thick side-scrapers, the two small discoidal end-scrapers, the two bone awls with pierced basal ends might somehow be connected with hunting. There also were a few fragments, twenty-two in all, of identifiable vegetable material. Eighteen of these twenty-two ^{fragments} are pods of runner beans. There are also a number of implements that would be connected with food gathering. These include pebble smoothers, two flat scraping planes and flat pebble chopper, and four thin saw-like choppers. This subsistence pattern plus the limited number of artifacts would seem to indicate that this first occupation was a very temporary one, made by a small group of people who did slightly more hunting than they did wild-plant collecting. The various artifacts in this top part of the gravels, are sufficiently diagnostic to allow us to classify it as being an occupation of the Infernillo phase. The Infernillo point, the pebble smoother, the pebble chopper, awl are Infernillo diagnostic traits. The disc scraper, the flat scraping planes and some of the other traits are of more general nature, but they usually also appear in Infernillo remains.

believe that this represents an occupation, Occupation I, that was deposited before the final period of deposition of the gravel.

Exactly what sort of an occupation this first one was, cannot be determined because the gravel deposition had almost completely destroyed the original floor. However, from the artifacts, the bones and the little vegetable material we can tell something about the subsistence pattern of these people. There were 80 bones as well as a number of implements that might somehow be connected with hunting. The Informal points, the thin and thick side-scrappers, the two small, flaked end-scrappers, the two bone awls with pierced basal ends might somehow be connected with hunting. There also were a few flint knives, twenty-two in all, of identifiable vegetable material. Nicholson of these twenty-two are made of human bones. There are also a number of implements that would be connected with food gathering. These include pebble scooters, two flat scraping planes and 11 pebble choppers, and four thin saw-like choppers. This subsistence pattern plus the limited number of artifacts would seem to indicate that this first occupation was a very temporary one, made by a small group of people who did slightly more hunting than they did wild-plant collecting. The various artifacts in this top part of the gravel, are definitely diagnostic to allow us to classify it as being an occupation of the Informal phase. The Informal point, the pebble and other, the pebble chopper, and the Informal diagnostic traits. The flint scraper, the flat scraping planes and some of the other traits are of bone, pebble material, but they usually also appear in Informal remains.

Distribution of
Fig. - 7 Zone I, Occupation 2 in cave Tm 248

Over the gravel and over the rock, where no gravel appears, was a thin, reddish layer full of vegetable material which is called Zone I, Occupation 2, and this only occurs in the east chamber of the cave. It is a relatively thin stratum but it is quite extensive. In total it makes up about 150 cubic feet of refuse. There are a number of features that are connected with it which include a hearth, a pit full of vegetable material and one shallow depression with a mat in it. Also laid on this layer in a number of spots are fragments of mats with grass that might also be thought of as being beds. The large extent of this layer leads me to the conclusion that we are probably dealing with a macro band who were here, ~~but~~ for a very short time. A little pollen analyzed from Occupation 2 revealed that these people were here when the climate was a good deal wetter than it is at present. This vegetable layer contained ~~quite a lot of~~ ^{abundant food} materials. There are 222 fragments of bone in it as well

Over the gravel and over the rock, where no gravel appears, was a thin, reddish layer full of vegetable material which is called Zone I, Occupation 2, and this only occurs in the east chamber of the cave. It is a relatively thin stratum but it is quite extensive. In total it makes up about 150 cubic feet of refuse. There are a number of features that are connected with it which include a hearth, a pit full of vegetable material and one shallow depression with a wall in it. Also laid on this layer in a number of spots are fragments of wares with glass that might also be thought of as being beds. The large extent of this layer leads us to the conclusion that we are probably dealing with a macro band who were here, but for a very short time. A little pollen analyzed from Occupation 2 revealed that these people were here when the climate was a good deal warmer than it is at present. This vegetable layer contained quite a lot of materials. There are 323 fragments of bone in it as well

as two identified deer fragments, and a bone of a skunk. The Infernillo and Almagre-type points, as well as the atlatl foreshaft fragments all would be connected with hunting. More indirectly with ^{connect the products of the hunt} hunting would be the pierced based awl, conical wedge, large disk scraper, and the flake side-scrappers. Almost as numerous as the evidence of hunting as that of food gathering. 185 wild plant remains occurred. There also were six wild squash seeds and some wild runner bean fragments. Humped and flat scraping planes, scraper-graver-like objects, disk choppers, pebble choppers, slab choppers, and a fragment of a digging stick, as well as some of the basket remains; all would seem to be connected with wild plant collecting. In the feces and in the refuse there were two small fragments of what seemed to be domesticated plants. In ^{these} the feces were some peppers as well as some pumpkin seeds and there was a definite fragment of a pumpkin rind found within the refuse. In total I would guess that probably 50 per cent of these people's subsistence came from hunting and 50 per cent came from wild plant collecting with an infinitesimal amount coming from agriculture. The three or four feces remains examined would seem to hint that actually there was more plant collecting ^{than} and hunting done by these people, but then again the meat remains are not quite so well preserved in the feces.

Besides these tools connected with subsistence we have some evidence of other activities as indicated by their material culture. The wooden Atlatl fragment, ^{the wooden fire tongs,} the number of whittled sticks seem to hint that one of their activities during their occupation in the cave was ^{wood working} wood-work and the chipped stone gouge may have been one of the tools of their trade. Perhaps the most numerous items ^{the basket} are connected with another activity, that of weaving. There ^{are} are a number of strands of string, ^{made manually, which were} most is of Z-twisted hard yarn ^{that} and had been made into either two or ^{yarn cord} four-cord rope.

as two identified deer fragments, and a bone of a sheep. The latter
and Alaskan-type rodents, as well as the small fragment of
would be connected with hunting. More indirectly with hunting would be
the pierced beadawl, conical wedge, large disk scraper, and the
flake side-scraper. Almost as numerous as the evidence of hunting is
that of food gathering. Ibs with plant remains occurred. There also
were six with squash seeds and some with runner bean fragments. Unusual
and flat scraping planes, scraper-graver-like objects, disk choppers,
pebble choppers, slab choppers, and a fragment of a digging stick, as
well as some of the basket remains; all would seem to be connected with
wild plant collecting. In the faces and in the refuse there were two
small fragments of what seemed to be domesticated plants. In the faces
were some papers as well as some pumpkin seeds and there was a definite
fragment of a pumpkin seed found within the refuse. In total I would
guess that probably 50 per cent of these people's subsistence came from
hunting and 50 per cent came from wild plant collecting with an initial
animal amount coming from agriculture. The three or four faces remaining
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Besides these tools connected with subsistence we have some evidence
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their activities during their occupation in the cave was wood work and
the chipped stone pieces may have been one of the tools of their trade.
Among the most numerous items are connected with another activity,
that of weaving. There are a number of strands of string, most in the
twisted form and had been made into all in two or four-core ropes.

A minor variety is ~~some~~ S-twisted hard yarn which has been made into either two-yarn cord or three-cord rope. Tied ~~on~~ some of the string ^{was tied bag} is a square knot and a Lark's Head knot. Some of this string has been woven into bags or baskets. Here the nets and bags are somewhat difficult to distinguish one from the other. There is a loop twine basket but it is sufficiently flexible and also so loose-knit that it would be perfectly justifiable to call this so-called basket a net bag. There also is a Fulgan-stitch-type basket. Beside these remains, in the beds and in a couple of the pits, ~~there are~~ ^{found} a number of fragments of chequer-weave mats. There also is one very small fragment of a twilled mat. A few snail beads indicate that these people even at this early stage were using some ornaments.

Diagnostic of this horizon are the Infernillo points, the pointed base atlatl foreshaft, the pierced bone awl, the scrapers graver objects, the disk chopper, the long digging stick, the fire tongue, the Fulgan bag, the loop twined basket or bag, and a one-over-one mat. All of these are good Infernillo traits. Most of the other traits are of a fairly general nature but also occur at other components of the Infernillo phase.

A minor variety is some 2-twisted hard yarn which has been made into either two-yarn cord of three-cord rope. Tied on some of the string is a square knot and a Turk's head knot. Some of this string has been

knover into bags or baskets. Here the nets and bags are somewhat

difficult to distinguish one from the other. There is a loop twine basket but it is sufficiently flexible and also so loose-knit that it would be perfectly justifiable to call this so-called basket a net bag. There also is a Turk's head-type basket. Beside these remains in the

beds and in a couple of the pits, there are a number of fragments of checker-board mats. There also is one very small fragment of a twisted mat. A few small beads indicate that these people even at this early

stage were using some ornaments.

Diagnostic of this horizon are the Infernillo points, the pointed base arrowheads, the pierced bone awl, the scraper-graver objects, the disk chopper, the long digging stick, the fire tongue, the Turk's head, the loop twine basket or bag, and a one-over-one mat. All of these are good Infernillo traits. Most of the other traits are of a fairly general nature but also occur at other components of the Infernillo phase.

Overlying much of the vegetable floor, Zone I, is a yellow ash layer. It appears in patches over the lower floor and actually seems to be some sort of an occupation. Much of it may have been dug away by peoples who excavated in the cave during Occupation 7 or 8 time period. The pollen from this layer have analyzed and reveal that the layer was laid down during a wet period. Some carbon from Zone H has been analyzed and reveals the Carbon 14 date of 8,200 years ago \pm 400. Estimating ^{is of} this relatively thin two to four inch thick layer of refuse ~~we would guess that~~ ^{we would estimate that} it composed about 16 cubic feet of refuse. Much of it has been burned and it only appears in the east chamber. We were unable to discern any definite features extending down from this layer and we do not have a large amount of archaeological material from it. The relatively small area occupied in the cave ~~which~~ seemed to indicate that we are dealing with a group somewhat smaller than the previous occupation, perhaps a micro band. However, the layer's thickness plus some of the vegetable material which include nuts and squash would seem to indicate that this small group occupied the cave probably for a whole season ~~or~~ perhaps a summer.

We have some indication of the subsistence pattern of these people. ^{identifiable} 149 bone fragments were uncovered and many of these had been split and scraped for marrow. Some bones of a deer, skunk and a bison also occurred in this layer. Artifacts connected with hunting are relatively rare and include some side-scrapers, small discoidal end-scrapers, and a fragment of what seems to be an Abasolo point. More numerous than the evidence of hunting are the evidence of wild plant collecting. There are 620 wild vegetable remains, many of them are agave, and a few of them are of opuntia. There are ^{also} a few pieces of tripsicum grass among these materials. There also are a fair number of implements that might be connected with

Overlying much of the vegetable floor, Zone I, is a yellow ash layer. It appears in patches over the lower floor and actually seems to be some sort of an occupation. Much of it may have been dug away by people who excavated in the cave during Occupation V or a time period. The pollen from this layer have analyzed and reveal that the layer was laid down during a wet period. Some carbon from Zone II has been analyzed and reveals the Carbon 14 date of 8,100 years ago \pm 400. Estimating this relatively thin two to four inch thick layer of refuse we would guess that it composed about 15 cubic feet of refuse. Much of it has been burned and it only appears in the east chamber. We were unable to discern any definite features extending down from this layer and we do not have a large amount of archaeological material from it. The relatively small area occupied in the cave which seemed to indicate that we are dealing with a group somewhat smaller than the previous occupation, perhaps a minor band. However, the layer's thickness plus some of the vegetable material which include nuts and seeds would seem to indicate that this small group occupied the cave probably for a whole season or perhaps a summer.

We have some indication of the subsistence pattern of these people. Large bone fragments were uncovered and many of these had been split and scraped for marrow. Some bones of a deer, skunk and a fish also occurred in this layer. Artifacts connected with hunting are relatively rare and include some side-scapers, small discoidal end-scrapers, and a fragment of what seems to be an Abasco point. More numerous than the evidence of hunting are the evidence of wild plant collecting. There are old wild vegetable remains, many of them are agave, and a few of them are of cactus. There are a few pieces of tripodal grass among these materials. There also are a fair number of fragments that might be connected with

wild plant collecting including some baskets, ^a/humped scraping plane, flake choppers, saw-like choppers, and a digging stick. Also, there is a little bit of evidence that these people used domesticated plants. The evidence consists of a few fragments of gourds and a few fragments of pumpkin. One of the feces also had what might be part of a pepper in among these remains. On the basis of both the plant material and the feces material ~~this cave seemed to agree~~ ^{FOUND IN THE} we would guess that perhaps 75 per cent of this sustenance came from wild plant collecting and about 24 per cent from hunting and perhaps one per cent from agriculture.

Other cultural material and activities and that of subsistence are fairly limited. Most of these seem to be connected with weaving. There ~~some yucca strands~~ ^{later} and some soft S-twisted yarn made into two-yarn cord, ~~there is~~ ^{later} some Z-twisted hard yarn which ~~is~~ ^{is} also made into two-yarn cord. Some of the string and yucca strand ~~have~~ ^{d been} tied overhead knots and square knots. Some of the string also had been made into loop-twined baskets. Here I say baskets rather than basket-like nets in that the coil element of these loop-twined baskets is fairly rigid. There are two fragments of a one-over-one mat, and also in that level are a series of quartz crystals that the inhabitants seemed to have saved for some reasons or other.

On the basis of the Abasolo point, the one-over-one mat, the loop-twined basket as well as the subsistence pattern we have classified this third occupation as being a component of the Infernillo phase. Most of the artifacts that have been found in this layer, are of quite a general nature and are just as diagnostic of Ocampo as they are Infernillo.

with plant collecting to obtain some material, and of course, there is
 these choppers, saw-like choppers, and a digging stick. Also, there is
 a little bit of evidence that these people used the same kind of
 The evidence consists of a few fragments of bones and a few fragments
 of pottery. One of the bones also had what might be part of a person
 in some of the remains. On the basis of both the plant material and the
 facts bearing this name seemed to agree we would guess that it was
 75 per cent of this evidence came from the plant collecting and about
 25 per cent from hunting and, perhaps, some from agriculture.

Other cultural material and activities are that of subsistence in
 the field. Most of these seem to be connected with weaving. There
 some woven articles and some soft 2-twisted yarn made into two-ply cord,
 there is some 2-twisted four-ply yarn which is also made into two-ply cord.
 Some of the string and yarns around have tied overhead knots and square
 knots. Some of the string also has four and two loop-twisted baskets.
 Here I say baskets with a thin basket-like net in that the coil element
 of these loop-twisted baskets is fairly rigid. There are two fragments
 of a one-over-one net, and also in that level are a series of depths
 crystals that the inhabitants seemed to have saved for some reason or
 other.

On the basis of the above point, the one-over-one net, the loop-
 twisted basket as well as the subsistence pattern we have classified this
 first occupation as being a component of the Llanos culture. Most of
 the artifacts that have been found in this layer, and which are of the
 nature and are just as diagnostic of Llanos as they are of Llanos.

Fig. - Zone G, Occupation 4 of Tm c 248.

Overlying the yellowish layer of Occupation 3 is a more definite vegetable layer which is called Zone G, Occupation 4. This layer appears as a series of patches throughout the cave and is never more than a couple of inches thick. I greatly suspect, that much of the original extent of this layer has been disturbed by pits from Occupations 7 and 8. On the basis of the ^{actual} layer and the reconstructed total extent of the layer there seems to have ^{been} 50 cubic feet of refuse. One pit full of vegetable material extended down from the layer. Due to its limited extent and relative thinness, we have guessed that a micro band laid down this layer and ^{less than one} probably left in the season. The gourd and squash and bean remains seem to indicate that this season was during the late spring or early summer. Pollen from this layer has been analyzed and seems to indicate that these people occupied Zone G during a period that was as dry as the present.

52 bones, all unidentifiable, an Abasolo and a Tortugas point, and a small discoidal scraper are the only indications we have that these

Fig. 1 - Zone G, Occupation 4 of the G.A.S.

Overlying the yellowish layer of Occupation 3 is a more definite vegetable layer which is called Zone G, Occupation 4. This layer appears as a series of patches throughout the cave and is never more than a couple of inches thick. I greatly suspect, that most of the original extent of this layer has been disturbed by its two Occupations 1 and 2. On the basis of the layer and the reconstructed total extent of the layer there seems to have been 50 cubic feet of refuse. One of the of vegetable material extended down from the layer. Due to the limited extent and relative thickness, we have guessed that a minor band from down this layer and probably left in the section. The ground and squash and bean remains seem to indicate that this season was during the late spring or early summer. Pollen from this layer has been analyzed and seems to indicate that these people occupied Zone G during a period that was as dry as the present.

All bones, all small shells, in places and a few large bones, and a small disarticulated arm are the only indications we have that these

people did any hunting. Much more numerous than the hunting remains are those of wild plant materials. We have 483 wild plant materials, mostly huapillas, agave and opuntia, as well as 16 pods of runner beans, 11 fragments of wild squash. The humped and flat scraping planes and the saw-like chopper may have been implements used to grind up these wild materials into ^{some} relatively palatable form. For the first time in this layer we have considerable evidence of agriculture. There are 23 rinds of pumpkin, 13 rinds of gourd, and in the feces seeds of both these plants. There also are seeds and pods of domesticated beans, both the yellow-seeded variety as well as the long red-brown variety. On the basis of these materials we have estimated that the subsistence pattern was about 75 per cent plant collecting, 20 per cent hunting, and 5 per cent agriculture. The few animal feces give a slightly different picture in that the majority of plant remains found in the feces are of cucurbitas. There are a few pods of either wild runner beans or domesticated beans, and three fragments of bone. On the basis of this it would appear that probably 50 or 60 per cent was wild plant collecting and 20 per cent agriculture and 20 per cent hunting. Again, I suspect that an average of what has been found in the feces and what definite evidence from animal and plant remains have been found would give us a ^{more accurate} ~~logical~~ estimate of just what the subsistence pattern was.

The ~~only~~ ^{of} other tools we have not connected with subsistence have ^{and some skins} ~~had~~ to do with the scraping of skin. A small discoidal scraper, side-scrapers, and perhaps the humped and flat scraping planes, would seem to indicate that while these people lived in the cave they did some skin scraping. However, their greatest activity during this brief occupation was in weaving. Hard and soft S-twisted yarns appear, and many of these have been twisted into two-yarn cord. There is a lesser amount of Z-twisted hard ^{yarn than} and soft

yarn which also has been S-twisted into two yarn cord. Overhand knots appear on yucca strands, and larks heads knots appear on the string. There also are two small fragments of mats, one is a one-over-one mat while the other is a twilled mat.

The Abasolo and Tortugas points, humped and flat scraping planes and the dominance of S-twisted yarn as well as the subsistence pattern allow us to classify Zone G, Occupation 4, as being a component of the Ocampo phase. The other artifacts not mentioned are of a more general nature but tend to confirm our Ocampo classification.

Distribution
Fig. - ¹ Zone F, Level 4 in cave Tm 1248

Overlying Zone G in most of the cave are small patches of grey ash, ^{zone F, level 4.} Some artifacts ~~have been found~~ were found in this grey ash but these have been included as part of Occupation, Zone G. In actual fact this so-called grey ash layer is more than half composed of cave dust, and I believe represents a time when the cave was unoccupied during a dry period when cave dust and wind-blown sand and ash covered the earlier

Yarn which also has been 2-twisted into the yarn count. Overhand knots appear on yucca strands, and having no 45 knots appear on the string. There are two small fragments of beads, one is a one-over-one knot while the other is a twisted knot.

The Yucatec and Totonac points, butted and first recording lines and the dominance of 2-twisted yarn as well as the cube-shaped pattern allow us to classify some G, Occupation 4, as being a component of the Ocampo phase. The other artifacts not mentioned are of a more general nature but tend to confirm our Ocampo classification.

Fig. - Zone F, Level 4

Overlaying Zone G in most of the cave are small patches of grey ash. Some artifacts ~~xxxxxxxxxxxx~~ were found in this grey ash but these have been included as part of Occupation, Zone G. In actual fact this so-called grey ash layer is more than half composed of cave dust, and I believe represents a time when the cave was unoccupied during a dry period when cave dust and wind-blown sand and ash covered the entire

occupation deposit.

Fig. - Zone E, Occupation 5 in cave Tm c 248

Overlying the grey ash was an extensive vegetable layer which varied from 1 to 3 inches thickness. This appeared ~~somewhat~~ as patches in the east chamber, but I suspect that once these patches were all connected and it was fairly continuous and quite a large layer. Based on this assumption we have estimated that Zone E, Occupation 5, had about 80 cubic feet of refuse in it. Extending down from this layer were two pits filled with vegetable material and one of them had mats associated with it. There also were in this layer a number of burned patches and a few fragments of fire-cracked rock, that might indicate hearth areas. On the ^{basis of the} relative great size of the area occupied I would estimate that we are ~~again~~ dealing with a macro band who lived in the cave for a season. Pollen analysis has been done on some of soils of Zone E and reveals that we are dealing with a dry period. A few sticks have been analyzed by Carbon 14 analysis and reveal a date of 5,650 years ago.

occupation deposit.

Fig. - Zone E, Occupation 5 in cave Tm c 248

Overlying the grey ash was an extensive vegetable layer which varied from 1 to 3 inches thickness. This appeared somewhat as patches in the east chamber, but I suspect that once these patches were all connected and it was fairly continuous and quite a large layer. Based on this assumption we have estimated that Zone E, Occupation 5, had about 80 cubic feet of refuse in it. Extending down from this layer were two pits filled with vegetable material and one of them had mats associated with it. There also were in this layer a number of burned patches and a few fragments of fire-cracked rock, that might indicate hearth areas. On the relative great size of the area occupied I would estimate that we are dealing with a micro band who lived in the cave for a season. Pollen analysis has been done on some of soils of Zone E and reveals that we are dealing with a dry period. A few sticks have been analysed by Carbon 14 analysis and reveal a date of 5,650 years ago.

A large amount of the remains that can be connected with their subsistence pattern were uncovered in this layer. 46 unidentifiable bones were uncovered. However, more and better evidence that these people hunted comes from the artifacts that occurred in the layer. These include an Abasolo projectile point, a pointed based atlatl foreshaft, a large end-scrapers, thick and thin side-scrapers, small disc scrapers, and conical and split wedges. However, the predominant activity in the subsistence line of these people seems to have been plant collecting. There are 805 vegetable remains that were identified and these include ten pods of wild runner beans and some pollen of panicum. Humped and flat scraping planes, scraper gravers, disk choppers and saw-like choppers as well as various bags may have been implements used in collecting wild plant remains. The evidence of the use of domesticated plants is relatively slim. It consists of only a few specimens of pumpkins and gourds. Thus I would guess that probably 80 per cent of their subsistence was based on wild plant collecting, about 18 per cent of hunting, and around 2 per cent on domesticated plants. These estimates based on food stuffs are ⁱⁿ radical variance with our evidence ^{from} of four feces. In the feces we found considerable evidence of peppers, some beans remains that probably are domesticated, a small amount of wild plant material, mainly pods of the wild runner beans, and some animal tissue. Also rather surprisingly we found corn silk and corn pollen. On estimate of their subsistence pattern based on feces would seem to indicate that perhaps 25 per cent of their subsistence came from domesticated plants, 50 or 60 per cent from wild plant collecting, and the remaining 15 or 25 per cent from hunting.

Other activities which these people seem to have done while in the cave was the scraping of skins. The numerous scrapers and the conical

A large amount of the remains that can be connected with their subsistence pattern were uncovered in this layer. As unidentifiable bones were uncovered. However, more and better evidence that these people

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There are 80% vegetable remains that were identified and these include ten pods of wild runner beans and some pollen of penicium. Humped and

flat scraping planes, scraper graters, disk choppers and saw-like choppers as well as various bags may have been implements used in collecting wild plant remains. The evidence of the use of domesticated

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some beans remains that probably are domesticated, a small amount of wild plant material, mainly pods of the wild runner beans, and some animal tissue. Also rather surprisingly we found corn silk and corn pollen. On estimate of their subsistence pattern based on feces would seem to indicate that perhaps 25 per cent of their subsistence came from domesticated plants, 50 or 60 per cent from wild plant collecting, and the remaining 15 or 25 per cent from hunting.

Other activities which these people seem to have done while in the cave was the scraping of skins. The numerous scrapers and the conical

and split wedges that might have been used for tying down skins certainly would be ample evidence of this. The gouge, the various pieces of whittled and cut wood as well as the atlatl foreshaft and the wedges themselves would also seem to say that they did some woodworking. A fragment of a braiding stone also may have been used for polishing of wood. The dominant activity, however, seems to have been connected with weaving and here we have ^{a wide variety} ~~quite a bit~~ of material all of which is ~~varied~~. The most numerous is the string. There are Z-twist two-yarn cord and two-cord rope, there is hard S-twisted yarn made into two-yarn cord and there are a number of fibres of just simple Z and S-twist ~~soft~~ ^{soft} yarn. These strings and various yucca fibres have been tied into over-hand knots and larks heads knots as well as square knots. Some of the string had been used to make a simple coiled bag. However, the making of mats and mat-like bags or baskets was a very important activity.

Yucca fibres have been used to make the three-over-three type ~~twilled~~ ^{weave} mat, and there were also simple twilled mats with two-over-two. Many of these mats with various kinds of borders have been folden and sewn up at their two edges so they became baskets. One of these baskets had a three-over-three center section and a two-over-two twilled side section; another had just exactly the opposite with a two-over-two center section and a three-over-three ~~strip~~ ^{strip} down the side. There was another one which had two-over-two center, then a single line made ^{weave} thre e-over-two and then a two-over-two twilled strip along its edges. There also was one basket which looked to have been of a relatively square shape, made by simple twilling. None of the other complicated coil baskets seem to have occurred at this time. Besides basket making, they seem to have made some beads out of snail shells.

In term of diagnostic traits the Abasolo point, the small disk

and split wedges that might have been used for tying down skins certainly would be ample evidence of this. The gouge, the various pieces of whittled and cut wood as well as the atlatl foreshaft and the wedges themselves would also seem to say that they did some woodworking. A fragment of a braiding stone also may have been used for polishing of wood. The dominant activity, however, seems to have been connected with weaving and here we have quite a bit of material all of which is varied. The most numerous is the string. There are 2-twist two-yarn cord and two-cord rope, there is hard 2-twisted yarn made into two-yarn cord and there are a number of fibres of just simple 2 and 2-twist Yarn. These strings and various yucca fibres have been tied into over-hand knots and larks heads knots as well as square knots. Some of the string had been used to make a simple coiled bag. However, the making of mats and mat-like bags or baskets was a very important activity. Yucca fibres have been used to make the three-over-three type twilled mat, and there were also simple twilled mats with two-over-two. Many of these mats with various kinds of borders have been folded and sewn up at their two edges so they became baskets. One of these baskets had a three-over-three center section and a two-over-two twilled side section; another had just exactly the opposite with a two-over-two center section and a three-over-three ~~xxxxxx~~ strip down the side. There was another one which had two-over-two center, then a single line made three-over-two and then a two-over-two twilled strip along its edges. There also was one basket which looked to have been of a relatively square shape, made by simple twilling. None of the other complicated coil baskets seem to have occurred at this time. Besides basket making, they seem to have made some beads out of shell shells. In terms of diagnostic traits the Abasco point, the small disk

scrapers, the humped and flat scraping plane, the scraper graver, the gouge, the abrading stone and the various kinds of twilled or twilled bordered baskets and mats, seem to indicate that Occupation ~~X~~ 5, Zone E, is a component of the Ocampo phase. The subsistence pattern tends to confirm such classification.

Overlying Zone E in a few spots and always underlying another vegetable layer, Zone C, Occupation 6 was a white ash layer. This ~~again~~ ^{white stratum} was more than half composed of cave dust and seems to represent a time when the cave was not occupied.

Fig. - Zone C, Occupation 6 of cave Tm c 248.

Overlying the white ash layer in various patches throughout the cave was Zone C, Occupation 6, a relatively thin vegetable layer. In many cases this layer was confused during excavation with Zone E, Occupation 5. However, it seems to be definitely separated from it and in ~~some~~ ^{all} cases over it. The layer itself has been badly destroyed by pitting from above and even a rather ~~generous~~ ^{generous} ~~not~~ estimate would/allow it more than 25 cubic feet of refuse. Thus I would guess that it represents an occupation for less than a season by a micro band. Vegetable material reveals that again we seem to be entering a period

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that was slightly more wet than at present. Some of these vegetable materials have been dated as 3,945 years ago.

Materials giving indication of the subsistence pattern are extremely numerous. There were 201 unidentifiable bones and one bone definitely from a deer. With these bone remains representing hunting there are also some possible hunting tools such as the Abasolo point, an atlatl mainshaft, a flat based atlatl foreshaft, and three Gary stemmed points, as well as a cane knife and a piece of a spring trap. These hunting indications, however, are insignificant when compared with the wild plant remains, which had 3,100 vegetable remains including wild squash, wild bean, tripsicum grass, panicum and amaranth. The only tools besides obvious baskets would be connected with plant collecting were the humped back scraper and a saw-like chopper. A number of domesticated plants were used including peppers, yellow-seeded common beans, squash, gourds, and a few cobs of corn. In terms of counts of food stuff it would seem that we have a horizon that is about 80 per cent based on wild plant collecting, perhaps 10 per cent on agriculture, and 10 per cent on hunting. Four feces from this horizon have been examined and give a very different picture. Two of the feces have beans and bean pod remains in them. This could be either wild or domesticated beans. The other two feces, however, have corn and beans in them and the final one has quite a bit of corn, pepper, domesticated beans and some panicum. On the basis of these materials it would seem that probably 60 per cent of their subsistence was gained from ^{wild} ~~domesticated~~ plants and the other 40 from domesticated plants. Again I suspect that an average/against of the feces estimate food stuff estimate would give us a fairly true picture. This ^{would} ~~true~~ picture might reveal that there is about 70 per cent of ~~their~~ Their diet from wild plant, 20⁵ per cent from domesticated plant, and 5 per cent

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from hunting.

Beside subsistence activities, skin scraping and skin preparation seems to have been one of the things they did in the cave. The hammered split wedges, the antler piercer, the scrapers and the knife, all could have been connected with the preparation of skins. The chiseled scraper-like mano also may have been used on them. As with the previous horizons, weaving is very important. They are mainly S-twisted yarns in this horizon but there are a few strands of Z-twisted yarns, some of this is made into two-yarn cord. Overhand knots and square knots tie up some of this string or rope or cord, as well as yucca strands. Much of these strings occurs with a simple loop net.

There, however, is also a piece of a fulgan basket made on a very solid foundation that is somewhat different than anything we have. Twilled mats are the predominant form; one mat with a three-over-three border and a twilled ^{center} ~~setter~~ had been made into a basket like the previous Ocampo horizon.

The Gary stemmed points, the flat atlatl foreshaft, the solid foundation ^{fulgan} fulgan basket, the dominance of twilled mats, and the subsistence pattern, as well as the archaeological date would seem to indicate that this horizon, Occupation 6, is a component of the Flacco phase. Many of traits, of course, are a continuation from Ocampo, but there are enough significant differences to keep it from ~~them~~ classified as Ocampo.

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The Gavi stemmed points, the flat atlatl foreshaft, the solid
foundation fringed basket, the dominance of twilled mats, and the
subsistence pattern, as well as the archaeological data would seem
to indicate that this horizon, Occupation 6, is a component of the
Flaco phase. Many of the traits, of course, are a continuation from
Ocampo, but there are enough significant differences to keep it from
being classified as Ocampo.

Fig. - Zone B, Occupation 7 of cave Tm c 248.

In both the west and east chamber of the cave overlying the early deposits was a thick layer of grey ash with occasional burnt patches in it and occasional vegetable layers. This is called Zone B, and seems to represent Occupation 7. Actually it may ^{have been} a number of individual occupations that we are unable to discern because the vegetable material is not as well preserved. There also is considerable evidence in terms of the disturbance of the lower layers that the people of Occupation 7 were pitting in the earlier layers and bringing up earlier materials as well as destroying their own floor levels. In terms of ^{the total} refuse there are over 900 cubic feet of refuse in this Zone B. On the basis of this plus the numerous burnt areas that might be hearths, I would suspect that Occupation 7₁ ^{whether one or more} was by a macro band for more than a single season. In this large layer there was considerable evidence of hunting. There were 1,143 unidentifiable cracked, split, ^{and} burnt animal bones. There also were identifiable animal bones of buffalo, deer,

Fig. - Zone B, Occupation V of cave Tm c 148.

In both the west and east chamber of the cave overlying the early deposits was a thick layer of grey ash with occasional burnt patches in it and occasional vegetable layers. This is called Zone B, and seems to represent Occupation V. Actually it may be a number of individual occupations that we are unable to discern because the vegetable material is not as well preserved. There also is considerable evidence in terms of the disturbance of the lower layers that the people of Occupation V were pitting in the earlier layers and bringing up earlier materials as well as destroying their own floor levels. In terms of refuse there are over 900 cubic feet of refuse in this Zone B. On the basis of this plus the numerous burnt areas that might be hearths, I would suspect that Occupation V was by a much larger group than a single season. In this large layer there was considerable evidence of hunting. There were 1,143 unidentified cracked, split, burnt animal bones. There also were identifiable animal bones of buffalo, bear,

^{ph}goat, possum, mouse and birds. Artifacts that might be connected with the hunt are extremely numerous. They include a whole series of projectile points which I will briefly enumerate: the Palmillas, San Lorenzo, Catan, Matamores, Gary, Flacco, Nogales, Tortiga, El Magre, Abasolo and Infernillo points occur in this level. All, except the San Lorenzo and possibly the Catan and Matamores points, would be considered to be atlatl ^{these being arrow points} points. There also are atlatl mainshafts, arrow mainshafts, fragments of bows and part of a spring trap. Other objects that might be ^{indirectly} connected with animal remains are the bone needle and ore, the scraper handle, the conical and split wedges, the thin and thick scrapers, the elongate scrapers, the small chipped disks, the crudely chipped medium disk scrapers, the triangular end scrapers, the chipped ^dgrill, the small chipped, bifacial disk, and chipped knives. Thus there is ^{on the basis of the American} considerable evidence that at this time this macro band probably was staying in the cave through a ^{Perhaps using the cave as a fence} number of months, for doing some hunting. Vegetable material is still, however, quite numerous and there were over 2,000 plant remains. Many of these are desert type plants such as huapilla, opunthia and agavia^e. However, there are a number of fragments of wild runner beans and wild squashes. Artifacts that can be connected with this plant collecting are less numerous. There are the baskets and bags. There are also humped and flat scraping planes, scraper gravers, large chipped disks and pebble choppers, and saw-like choppers. Agricultural remains represent another big section. These include gourds, pumpkins, warty squash, and pepper seeds; at least two varieties of beans, lima beans, corn, and some cotton seeds, ^{and there were also} are some cigarette butts in here. The pottery, of course, could have been used to cook some of these plant remains in. A few feces occurred and they reveal that about one third of the eating materials was meat and the other third wild plant, and

goats, possum, mouse and birds. Artifacts that might be connected with the hunt are extremely numerous. They include a whole series of projectile points which I will briefly enumerate: the Palmillas, San Lorenzo, Catán, Matamoros, Gery, Elasco, Nogales, Tortuga, El Lagre, Basolo and Infernillo points occur in this level. All, except the San Lorenzo and possibly the Catán and Matamoros points, would be considered to be at least points. There also are small mainshaft, arrow mainshaft, fragments of bows and part of a spring trap. Other objects that might be connected with animal remains are the bone needle and one, the scraper handle, the conical and split whetstones, the thin and thick scrapers, the elongate scrapers, the small chipped disks, the crudely chipped medium disk scrapers, the triangular end scrapers, the chipped drill, the small chipped, bifacial disk, and chipped knives. Thus there is considerable evidence that at this time this macro band probably was staying in the cave through a number of months, for doing some hunting. Vegetable material is still, however, quite numerous and there were over 1,000 plant remains. Many of these are desert type plants such as pupalia, opuntia and agave. However, there are a number of fragments of wild runner beans and wild squashes. Artifacts that can be connected with this plant collecting are less numerous. There are the baskets and bags. There are also humped and flat scraping planes, scraper gravers, large chipped disks and pebble choppers, and saw-like choppers. Agricultural remains represent another big section. These include gourds, pumpkins, warty squash, and pepper seeds; at least two varieties of beans, lima beans, corn, some cotton seeds, and there are some cigarette butts in here. The pottery, of course, could have been used to cook some of these plant remains in. A few feces occurred and they reveal that about one third of the eating materials was meat and the other third wild plant, and

the remaining third was domesticated plant remains. This is more or less in agreement with the preserved food stuff remains except that it gives more emphasis to hunting than they do. In terms of cultural activities other than subsistence we pointed out that there is considerable evidence that these people were scraping skins, and the needles and awls and the choppers and scrapers, and so forth. There also are a couple of celts in here which indicate some wood work. The antler flaker and the many flint chips would indicate that they were making projectile points. Two other activities are important, one is ~~the~~ weaving. Great quantities of string appeared throughout Zone B. Most of it is S-twisted soft-fibre yarn; this is made into various kinds of cord and rope. There were little amounts of Z-twisted cotton yarn. However, these were a minority. Pieces of yucca and the string were tied into various overhand, square and granny knots, and there were a couple of pieces of fibre that had been woven into yucca rings. There also were a couple of ^{carrying} ~~Caring~~ loops. A number of baskets of both the bowl and pan shape were made and these are all of the split stitch ~~under~~ ^{bundle} foundation variety. Twilled mats occurred and are usually square and quite large, the sort that could be used for bedding. There is one difference earlier ones in that the decoration in these is done by weaving different coloured elements through the mat. Other activities which have an aesthetic implication are the shell and bone beads that appeared in the refuse. Pottery is not overly numerous and is mainly Ocampo corrugated, though San Lorenzo smooth and San Lorenzo black appear. There is one small piece of San Lorenzo engraved, and there also is a cherd of Palmillas engraved. In a deep pit in the west chamber a burial wrapped in two brightly coloured twilled mats occurred. Though it was in roughly the same position and in ^{some sort} ~~in~~ bundles ^{as} ~~than some of our~~ earlier Mesa de Guaje burials, it had none of the ^{laters} ~~others~~ numerous

the remaining third was domesticated plant remains. This is more or less in agreement with the preserved food stuff remains except that it gives more emphasis to hunting than they do. In terms of cultural activities other than subsistence we pointed out that there is considerable evidence that these people were scraping skins, and the needles and awls and the choppers and scrapers, and so forth. There also are a couple of colts in here which indicate some wood work. The earlier flint and the many flint chips would indicate that they were making projectile points. Two other activities are important, one is ~~the~~ weaving. Great quantities of string appeared throughout Zone B. Most of it is 2-twisted soft-fibre yarn; this is made into various kinds of cord and rope. There were little amounts of 3-twisted cotton yarn. However, these were a minority. Pieces of yucca and the string were tied into various overhand, square and granny knots, and there were a couple of pieces of fibre that had been woven into yucca rings. There also were a couple of Goring loops. A number of baskets of both the bowl and pan shape were made and these are all of the split stick under foundation variety. Twilled mats occurred and are usually square and quite large, the sort that could be used for bedding. There is one difference earlier ones in that the decoration in these is done by weaving different coloured elements through the mat. Other activities which have an aesthetic implication are the shell and bone beads that appeared in the refuse. Pottery is not overly numerous and is mainly Gompco corrugated, though San Lorenzo smooth and San Lorenzo black appear. There is one small piece of San Lorenzo engraved, and there also is a chert of Palmitas engraved. In a deep pit in the west chamber a burial wrapped in two brightly coloured twilled mats occurred. Though it is in roughly the same position and in bundles than some of our earlier Mesa de Guaje burials, it had none of the other numerous

features, and it was relatively simple. Thus beside occupying the two caves, these San Lorenzo people also put a burial in their occupation and refuse.

In terms of cultural affiliation I suspect many of the artifacts found in this layer might have been dug up from earlier horizons. There are ^{however} a number that are definitely diagnostic of the San Lorenzo phase and these include the San Lorenzo pottery types, both the smooth, brushed, and black engraved, the Ocampo corrugated ware, the San Lorenzo points, triangular end scrapers, the small bifacially chipped disks and drills, as well as the twilled bi-chrome mat. Thus Zone B, Occupation 7, becomes another component of the San Lorenzo phase.

Fig. - Zone A, Occupation 8, in cave Tm c 248.

Overlying the interior of the cave in the west chamber was a brownish layer often with well preserved vegetable material in it. This and part of the top layer of the more frontal part of the cave, is considered to be Zone ^A Z, Occupation 8. This layer covers a considerable part of the cave and varies between one and six inches in

features, and it was relatively simple. Thus beside occupying the two caves, these San Lorenzo people also put a burial in their occupation, and refuse.

In terms of cultural affiliation I suspect many of the artifacts found in this layer might have been dug up from earlier horizons. There are a number that are definitely diagnostic of the San Lorenzo phase and these include the San Lorenzo pottery types, both the smooth, brushed, and black engraved, the Ocampo corrugated ware, the San Lorenzo points, triangular end scrapers, the small bifacially chipped disks and drills, as well as the twilled bit-chrome mat. Thus Zone B, Occupation 7, becomes another component of the San Lorenzo phase.

Fig. - Zone A, Occupation 8, in cave Tm c 248.

Overlying the interior of the cave in the west chamber was a brownish layer often with well preserved vegetable material in it. This and part of the top layer of the more frontal part of the cave, is considered to be Zone 2, Occupation 8. This layer covers a considerable part of the cave and varies between one and six inches in

thickness. There are three pits that have been dug down from and a number of areas that had mats in them on top of grass; they probably were beds. On the basis of the large extent of the area, about 600 cubic feet, as well as the numerous beds, I would suspect that this represents an occupation by a macro band for at least a season. Pollen and floral material indicate the climate was almost exactly as it is today.

Subsistence pattern data is fairly good. 128 unidentifiable split, burnt and broken bones were found. Artifacts that might be connected with the hunt were the Palmillas, Catan, Matamores, Gery, Tortugas, Nogales, Almagre, and Infernillo atlatl points as well as the Fresno and Starr arrow fragments, ^{and an} ~~as well as the~~ arrow shaft. There also ^{for a trap} was a trigger, and a couple of spring traps. Winged flint drills, small disks, small bi-facial disks, thick and thin side scrapers and elongate end scrapers could have been used to prepare the skins of animals taken in the hunt. Much more numerous than the animal bones were the wild plant materials, and here 1,360 remains were uncovered. Many, ~~many~~ of these are runner beans, but again they are a great deal outnumbered by desert plants such as yucca, agave, and huapillas. Pebble manos, the clay and stone pestles, the humped and flat scraping planes, and the saw-like choppers may have been used to prepare these wild food stuffs. Agricultural remains are fairly numerous and there are a number of cobs of ~~and~~ corn. There are a few peppers and a couple of walnut and pumpkin seeds. There also are some cigarettes and a few pods of the red-brown type of common bean. Estimates based on preserved food stuff would seem to indicate that perhaps 60 per cent of their diet came from wild food plants, about 30 per cent from agriculture and 10 per cent from hunting. Feces again give a slightly different picture, with about

thickness. There are three pits that have been dug down from and a number of areas that had mats in them on top of grass; they probably were beds. On the basis of the large extent of the area, about 600 cubic feet, as well as the numerous beds, I would suspect that this represents an occupation by a macro band for at least a season. Pollen and floral material indicate the climate was almost exactly as it is today.

Subsistence pattern data is fairly good. 148 unidentified split, burnt and broken bones were found. Artifacts that might be connected with the hunt were the palmillas, Catán, Matamoras, Geiy, Tortugas, Nogales, Almagre, and Intermillo atlatl points as well as the Fresno and Starr arrow fragments, as well as the arrow shaft. There also was a trigger and a couple of spring traps. Winged flint drills, small disks, small bi-facial disks, thick and thin side scrapers and elongate end scrapers could have been used to prepare the skins of animals taken in the hunt. Much more numerous than the animal bones were the wild plant materials, and here 1,300 remains were uncovered. Many, many of these are runner beans, but again they are a great deal outnumbered by desert plants such as yucca, agave, and huapillas. Pebble manes, the clay and stone pestles, the humped and flat scraping planes, and the saw-like choppers may have been used to prepare these wild food stuffs. Agricultural remains are fairly numerous and there are a number of cobs of corn. There are a few peppers and a couple of walnut and pumpkin seeds. There also are some cigarettes and a few pods of the red-crown type of common bean. Estimates based on preserved food stuff would seem to indicate that perhaps 60 per cent of their diet came from wild food plants, about 30 per cent from agriculture and 10 per cent from hunting. Feces again give a slightly different picture, with about

40 per cent seemingly coming from agriculture, 40 per cent from wild food plant collecting, and 20 per cent from hunting. There are a number of other activities indicated by various artifacts in this top level. The celt and part of a gouge, the incomplete fire tongue and the incomplete shafts of arrows and atlatls would seem to indicate that some wood working was undertaken. A long pointed stick is also evidence of wood-working, and the stick may have been used for corn planting. Split wedges and conical wedges, the various scrapers as well as the leather thong seem to show that some skin preparation was done during this occupation. Weaving again is an important industry. Most of the string is S-twisted soft fibre yarn, which is made into various kinds of cords and rope. There is also quite a large amount of Z-twisted cotton, probably made on a spindle whorl. Overhand and square knots occur on the string as well as on yucca. There is some plain-weave cotton cloth, a one-over-one twilled mat, a two-over-two twilled mat, and a large twilled palm leaf basket-like implement. There is a fragment of a bow drill and also pierced shell and stone beads that may have been drilled by drill. There is a wooden flute and a paint stone and one piece of mat that seems to be painted. However, probably most of the painting was done with the pottery. Here there is a wide variety, but particularly interesting are the San Antonio red polished ware. There are many sherds of San Lorenzo general type ware, as well as a few of Palmillas.

*was where a
handful of
some metal
found*

In terms of cultural affiliation the winged drill, the Fresno and ^{Antonio} Starr points, the San ~~Lorenzo~~ ^{and} red polished pottery, as well as the bow drill and some of the plain weave cotton would seem to indicate that here we are dealing with a component of the San Antonio phase. As might be expected in the top layer, particularly in a cave that has

40 per cent seemingly coming from agriculture, 40 per cent from wild food plant collecting, and 20 per cent from hunting. There are a number of other activities indicated by various artifacts in this top level. The calf and part of a gouge, the incomplete five tongue and the incomplete shafts of arrow and atlatls would seem to indicate that some wood working was undertaken. A long pointed stick is also evidence of wood-working, and the stick may have been used for corn planting. Split wedges and conical wedges, the various scrapers as well as the leather thong seem to show that some skin preparation was done during this occupation. Weaving again is an important industry. Most of the string is 2-twisted soft fibre yarn, which is made into various kinds of cords and rope. There is also quite a large amount of 2-twisted cotton, probably made on a spindle whorl. Overhand and square knots occur on the string as well as on yucca. There is some plain-weave cotton cloth, a one-over-one twilled mat, a two-over-two twilled mat, and a large twilled palm leaf basket-like implement. There is a fragment of a bow drill and also pierced shell and stone beads that may have been drilled by drill. There is a wooden flute and a point stone and one piece of mat that seems to be painted. However, probably most of the painting was done with the pottery. Here there is a wide variety, but particularly interesting are the San Antonio red polished ware. There are many sherds of San Lorenzo General type ware, as well as a few of Palmillas.

In terms of cultural affiliation the winged drill, the Fresno and Starr points, the San Lorenzo red polished pottery, as well as the bow drill and some of the plain weave cotton would seem to indicate that here we are dealing with a component of the San Antonio phase. As might be expected in the top layer, particularly in a cave that has

been pitted by treasure hunters as well as by the aborigines there are many artifacts that are like the earlier horizons. Some of these may have been dug up while others may be cultural continuities.

Summary

been played by various factors as well as of the conditions there and
very likely that the latter conditions, some of the way
have been put up with others may be cultural conditions.

Summary

1. The first part of the report

describes the general situation

CHAPTER II - Section II

Valenzuela's Cave (Tm c 248)

by David Kelley

Introduction

The study of these materials was partly supported by a grant from Harvard University (CHECK with Willey just how he wishes this acknowledgment made).

Tm c 248, or Valenzuela's Cave as we have called it, is a two-chambered cave located in the Penal de la Virgen (popularly called Flacco) tributary of Infernillo canyon in the Sierra Azul, north of Ocampo, Tamaulipas. Geologically, this limestone area, honeycombed with caves, belongs to the coastal zone, but physiographically it is one of the lesser ranges of the Sierra Madre. This cave is one of a series occupying nearly the same height above the canyon floor, apparently formed due to a slightly softer layer in the limestone. Portions of Tm c 248 lie directly under portions of Tm c 247, which makes the relationship between the two beds of gravel which form their respective floors rather puzzling.

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Excavation

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The entire cave was divided into five-foot squares, marked off by wooden stakes. The squares were named after the stake in their SE corner which in turn was measured in conventionally determined directions N, E, S, and W of a zero stake. Both east and west chambers were measured from this zero stake. The first square dug, N10 E5, Kelley did himself in order to demonstrate to his new workmen what he wanted done. This square was dug by arbitrary levels. All other squares were dug by natural levels, with the exception that certain large pits from what was later called Level 2, including sometimes more than a complete square, were not originally recognized as pits and were dug by arbitrary levels, as natural levels were not apparent in them. Profiles were normally drawn only at five-foot intervals, and artifacts located only by square and level, although the actual digging unit was about one third of a square, and profiles were cleaned at such points before proceeding with the square. No attempt was made to establish sub-divisions within the gravel, although it was cleared one shovel's depth at a time, roughly, so that some estimate could be made as to whether an artifact

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carded. Even so, it is probably that many of the cruder stone tools were discarded. Only distribution analysis sufficed to convince us that some of my tool types really were artifacts. Our seven workmen alternated between digging and screening, with one man moving back dirt each day. All domestic plants and all plants which showed signs of having been used as food were saved in all squares, and all vegetable materials from some squares were saved. All bones were also saved.

The plan of excavation was to end up with three trenches, running north and south and connected by a cross trench on the north of the cave running east and west. This was done, and left standing parallel profiles at five-foot intervals across the cave, which were very helpful in correlating the levels. They were finished about half-way through the dig, and at this time we had been packing the materials decidedly haphazardly, only making certain that level and square labels accompanied each bag of artifacts and/or vegetable remains, and only separating the most fragile artifacts, such as mats, from the vegetable materials. A twenty-mile (or more) trip with the artifacts loaded on mule back and often swaying distressingly convinced us that this was not the best way to transport artifacts, and that artifacts which were to be transported in this fashion (as they had to be) had better be more carefully packed.

On returning to the cave, Kelley set up the system of eight levels by which the remainder of the cave was dug. At the same time, he decided to wash and number all stone artifacts and potsherds as they were excavated. The photographic record was decidedly skimpy, but in most cases there seemed no reason for photographs, except a punctilious regard for the record. Kelley does not believe additional photographs would have aided the analysis at any point where it would conceivably have occurred to him to take them. Most of the photographs were taken

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In spite of these errors of procedure and occasional mishaps, we do not believe the analysis has suffered particularly from them. Generally speaking, in correlating the profiles, when a level in a square was rich enough so that several artifacts were found in it, it was distinctive enough so that it could satisfactorily be correlated with other squares. In only one case was there doubt as to whether a level belonged to the pre-Ceramic or Ceramic periods from its stratigraphic position, and in that case the complete absence of corn or pottery in a rich vegetable layer was sufficient evidence that the layer belonged to the pre-Ceramic periods. In most cases, the problems at issue are whether a particular level correlates with the general Level 3 or Level 5 in one case, or whether it is Level 5 or Level 7 in another. In one square a particular level may be Level 3, 5 or 7, but this is surrounded by pits from Level 2 which would have made it nearly impossible to determine in any case. In case of doubt, artifacts have been classed with the higher of two possible levels, as the frequent pitting from Level 2 made this a factor which had to be allowed for in analysis in any case. The accompanying table of correspondences of the levels in the different squares is the one which was used in analyzing

the artifact distributions. I believe that its probably occasional inaccuracies are not such as to seriously affect the analysis. To spend hours of work attempting to iron out the minor discrepancies between two profiles when the result would affect at most one or two artifacts seemed a disproportionate effort.

A preliminary analysis was done with MacNeish in Cambridge at Easter time, 1955. This analysis, because MacNeish had studied the other caves, was a great help to Kelley, particularly with regard to the stone artifacts, although we have since departed from it at a number of points.

The second analysis was undertaken by laying out all the artifacts by levels and then examining them minutely for likenesses and differences. When types were tentatively roughed out, chi squares were done on some of them to see if the distributions differed significantly. Naturally, two validly distinct types may have the same distribution, but a significant difference in distribution is usually a fairly good indication that the distinction between the types is valid. One surprisingly helpful result of this was the realization that the west chamber provided a test of the amount of pitting done in the east chamber, and its affect upon the artifact assemblage. The west chamber contained only deposits of the ceramic periods and of the gravels, so that the people had none of the earlier deposits to dig pits into. This means that an artifact type which is found in abundance in the Level 2 ceramic deposits of the east chamber, or on the surface, and which is completely lacking in the west chamber has probably been dug up from the earlier deposits, which the abundant pits make likely.

The final analysis was done after all the vegetable and artifact types of the whole area had been established and the cultural complexes

For these reasons we have also included the following information in the report:

delineated. MacNeish then redrew, numbered and named the various zones, floors and occupations in accordance with a system that he had established for the other two caves. He then attempted to correlate this material and Kelley checked and corrected his results. In gross outline the stratigraphy, levels, layers, occupations and cultures were as follows:

Zone A	- top vegetable or brown stratum	- Occupation 8 (Level 1)	- San Antonio
Zone B	- gray ash	- Occupation 7 (Level 2, 2a, 2b and 2c)	- San Lorenzo
Zone C	- vegetable	- Occupation 6 (Level 3 in Squares E25, E20, and S5W5)	- Flacco
Zone D	- white ash		?
Zone E	- vegetable	- Occupation 5 (Level 3 except above)	- Ocampo
Zone F	- gray ash	(Level 4)	- Ocampo
Zone G	- vegetable	- Occupation 4 (Level 5)	- Ocampo
Zone H	- yellow ash	- Occupation 3 (Level 6)	- Infernillo
Zone I	- lower vegetable	- Occupation 2 (Level 7)	- Infernillo
Zone J	- gravel	- Occupation 1 (Level 8)	- Infernillo

REPORT OF THE EXCAVATION OF CAVE 248 OF THE SURVEY OF TAMAULIPAS. Prepared by David H. Kelley. The study of these materials was partly supported by a grant from Harvard University (CHECK with Willey just how he wishes this acknowledgment made).

TMC 248, or Valenzuela's Cave as we have called it, is a two-chambered cave located in the Penal de la Virgen, tributary of Infiernillo canyon in the Sierra Azul, north of Ocampo, Tamaulipas. Geologically, this limestone area, honeycombed with caves, belongs to the coastal zone, but physiographically it is one of the lesser ranges of the Sierra Madre. This cave is one of a series occupying nearly the same height above the canyon floor, apparently formed due to a slightly softer layer in the limestone. Portions of TMC 248 lie directly under portions of TMC 247, which makes the relationship between the two beds of gravel which form their respective floors rather puzzling.

The cave is somewhat more sheltered than TMC 247, and remained pleasantly cool on hot days. The remarkable preservation of vegetable materials is sufficient to attest that most parts of the cave were free from excessive moisture, although there was some seepage in one corner. The cave is on the south side of the canyon, with one of its two entrances facing nearly north and the other approximately west by north (see map). The two chambers (which are connected by a passageway in the rear) have been called for ease of reference the east chamber and the west chamber, as they would have been if oriented along the canyon, although in fact their compass directions do not warrant the terms. The conventional directions N, S, E, and W in which the squares were laid out are similarly modified from the true directions, which can easily be determined from the map. The west chamber

is considerably higher and narrower than the east chamber, and opens more directly onto the canyon. It is less protected than the east chamber, but lighter and more cheerful. The east chamber has a low roof, so that ~~we~~ ^{we} and several of ~~my~~ ^{our} workmen bumped our heads on it on different occasions. At the time of the first occupation, when the deposits had not yet been laid down, the floor was enough lower ~~that~~ so that this would not have occurred, but it must occasionally have bothered the inhabitants during the latest occupation period.

The excavation was the first that ^{excavation} ~~I~~ ^{Kelley} directed, and ^{his} ~~my~~ previous field experience was limited to assisting in TMC 247, some participation in a student dig at Teotihuacan, and a summer digging as workman in the Roman and Anglo-Saxon sites at Southampton, England. The workmen were without experience, except for two who had aided in the excavation of TMC 247. With these drawbacks, a number of mistakes were made, mostly involving insufficient recording of data, and often becoming apparent to me only during the analysis of materials. During the first half of the dig, the correlations of levels from one square to another were not always adequate; at that time, a standard series of levels was adopted, as the general sequence of the stratigraphy had become clear, and ^{we} ~~I~~ believe that the squares dug subsequently were correlated as adequately as was possible. Profiles were not always drawn as soon as a square was dug, but were left for later when the profiles themselves were left, since the men were digging faster than ^{Kelley} ~~I~~ could keep up with them and at the time, operating on a rather meagre budget, it seemed to ^{him} ~~me~~ inadvisable to leave them idle for long periods while ^{Kelley} ~~I~~ drew up

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The entire cave was divided into five-foot squares, marked off by wooden stakes. ~~I dug the first square, N10E5~~ The squares were named after the stake in their SE corner which in turned was measured in conventionally determined directions N,E,S, and W of a zero stake. Both east and west chambers were measured from this zero stake. The first square dug, N10E5, ^{Kelley} ~~I~~ ^{him} did myself in order to demonstrate to ^{his} ~~my~~ new workmen what ^{he} ~~I~~ wanted done. This square was dug by arbitrary levels. All other squares were dug by natural levels, with the exception that certain large pits from what was later called Level 2, ~~embracing~~ ^{including} sometimes more than a complete square, were not originally recognized as pits and were dug by arbitrary levels, as natural levels were not apparent in them. Profiles were normally drawn only at five-foot intervals, and artifacts located only by square and level, although the actual digging unit was about one third of a square, and profiles were cleaned at such points before proceeding with the square. No attempt was made to establish sub-divisions within the gravel, although it was cleared one shovel's depth at a time, roughly, so that some estimate could be made as to whether an artifact* was near the top of the gravel or 'well down in', that is more than one shovel's length down, normally. All materials were ~~to~~ screened, and the workmen were instructed to save many dubious artifacts and plant materials

on the presumption that it was better to have things and decide to throw them away than to wish that you had saved things which were discarded. Even so, it is probable that many of the cruder stone tools were discarded. Only distribution analysis sufficed to convince ^{us} ~~me~~ that some of my tool types really were artifacts. ^{Our} ~~My~~ seven workmen alternated between digging and screening, with one man moving back dirt each day. All domestic plants and all plants which showed signs of having been used as food were ^{in all squares} saved, and all vegetable materials from some squares were saved. ^{INSERT} All bones were also saved.

The plan of excavation was to end up with three trenches, ~~*****~~ running north and south and connected by a cross trench on the north of the cave running east and west. This was done, and left standing parallel profiles at five-foot intervals across the cave, which were very helpful in correlating the levels. They were finished about half-way through the dig, and at this time the first batch of artifacts was taken out from the cave. Up to this time ^{we} ~~I~~ had been packing the materials decidedly haphazardly, only making certain that level and square labels accompanied each bag of artifacts and/or vegetable remains, and only separating the most fragile artifacts, such as mats, from the vegetable materials. A twenty-mile (or more) trip with the artifacts loaded on mule back and often swaying distressingly convinced ^{us} ~~me~~ that this was not the best way to transport artifacts, and that artifacts which were to be transported in this fashion (as they had to be) had better be more carefully packed.

Kelley

On returning to the cave, ~~I~~ set up the system of eight levels by which the remainder of the cave was dug. At the

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Most of the photographs were taken by Peter P. Pratt when he
came out to the cave near the end of the excavations, although
^{Kelley} I had one camera with ^{him} me for use in case of possible burials.

out The subsequent transportation of the artifacts from Mexico
to New Hampshire ^{by jeep} also taught me some things. There was rain every
day from Texas to Washington, and some of it got down among the
stone artifacts, although the tarpaulins were sound every time
I checked. This meant that the numbers on 2 or 3 of the artifacts
washed off. Fortunately, the perishable artifacts were more
carefully wrapped and suffered no damage. Some of the large stone
artifacts also probably received some fresh scars from the jouncing
they received on this trip, although I do not believe many of
them did.

In spite of these errors of procedure and occasional mis-
haps, ^{we} I do not believe the analysis has suffered particularly
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case was there doubt as to whether a level belonged to the
pre-ceramic or ceramic periods, and in that case the complete
absence of corn or pottery in a rich vegetable layer was

sufficient evidence that the layer belonged to the pre-ceramic periods. In most cases, the problems at issue are whether a particular level correlates with the general level 3 or level 5 in one case, or whether it is ~~L~~5 or L7 in another. In one square a particular level may be L3, L5 or L7, but this is surrounded by pits from L2 which would have made it nearly impossible to determine in any case. In case of doubt, artifacts have been classed with the higher of two possible levels, as the frequent pitting from L2 made this a factor which had to be allowed for in analysis in any case. The accompanying table of correspondences of the levels in the different squares is the one which was used in analyzing the artifact distributions. I believe that its probable occasional inaccuracies are not such as to seriously affect the analysis. To spend hours of work attempting to iron out the minor discrepancies between two profiles when the result would affect at most one or two artifacts seemed a disproportionate effort.

out
A preliminary analysis was done with MacNeish in Cambridge at Easter time, 1955. Unfortunately, during this analysis the labels of about five of the perishable artifacts seem to have been lost, unless indeed some of them had been completely without labels from the start, which I only remember to have been true of one of them. *MacNeish had absolutely no access* This analysis ^{we} was a great help to me, particularly with regard to the stone artifacts, although ~~I~~ ^{we} have since departed from it at a number of points. I believe that all the points of difference as to artifact classification can be determined from the catalogue, but they do not represent the total difference between the present analysis and that preliminary one, since

the different squares had not been correlated at that time, and it was impossible to be at all sure as to the levels to which a given artifact belonged.

The record
This analysis was undertaken by laying out all the artifacts by levels and then examining them minutely for likenesses and differences. When types were tentatively roughed out, chi squares were done on some of them to see if the distributions differed significantly. Naturally, two validly distinct types may have the same distribution, but a significant difference in distribution is usually a fairly good indication that the distinction between the types is valid. One surprisingly helpful result of this was the realization that the west chamber provided a test of the amount of pitting done in the east chamber, and its affect upon the artifact assemblage. The west chamber contained only deposits of the ceramic periods and of the gravels, so that the people had none of the earlier deposits to dig pits into. This means that an artifact type which is found in abundance in the L2 ceramic deposits of the east chamber, or on the surface, and which is completely lacking in the west chamber has probably been dug up from the earlier deposits, which the abundant pits make likely. Since TMC 248 does not have the pre-ceramic maize period of TMC 247, it follows that these artifacts belong at least to the pre-maize period, which makes them of considerably more interest than their presence in L2 ceramic deposits as simply possibly dug up or possibly ~~new~~ long-continued traditions.

Get Geological opinion on
cutting rate on limestone.

I & the estimate based on
counts of bone and

pg. 14. - gerards never found in feces &
sheep never found. - counting food

pg. 14 - offers alternative hypothesis
concerning type of occupation, because
of lack of size

pg. 17 - how many plants

pg. 19 - alternate reproductive occupation
possible

pg. 26 - other possibility

Why not more skulls

pg. 29 - suggest alternate
what about feces

30 - would that be many different
structures of layers & estimate of
duration of occupation

Should comment on Mesa accumulation

47 - comment putting proportions
and possible class implication

- In interpretation remember it all
may be same

page 48 - beds indicate better
on family size - also
may a couple of seasons

parallelly better not to use
resents on size description

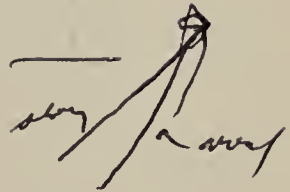
78 - check up on "me", & and "we"

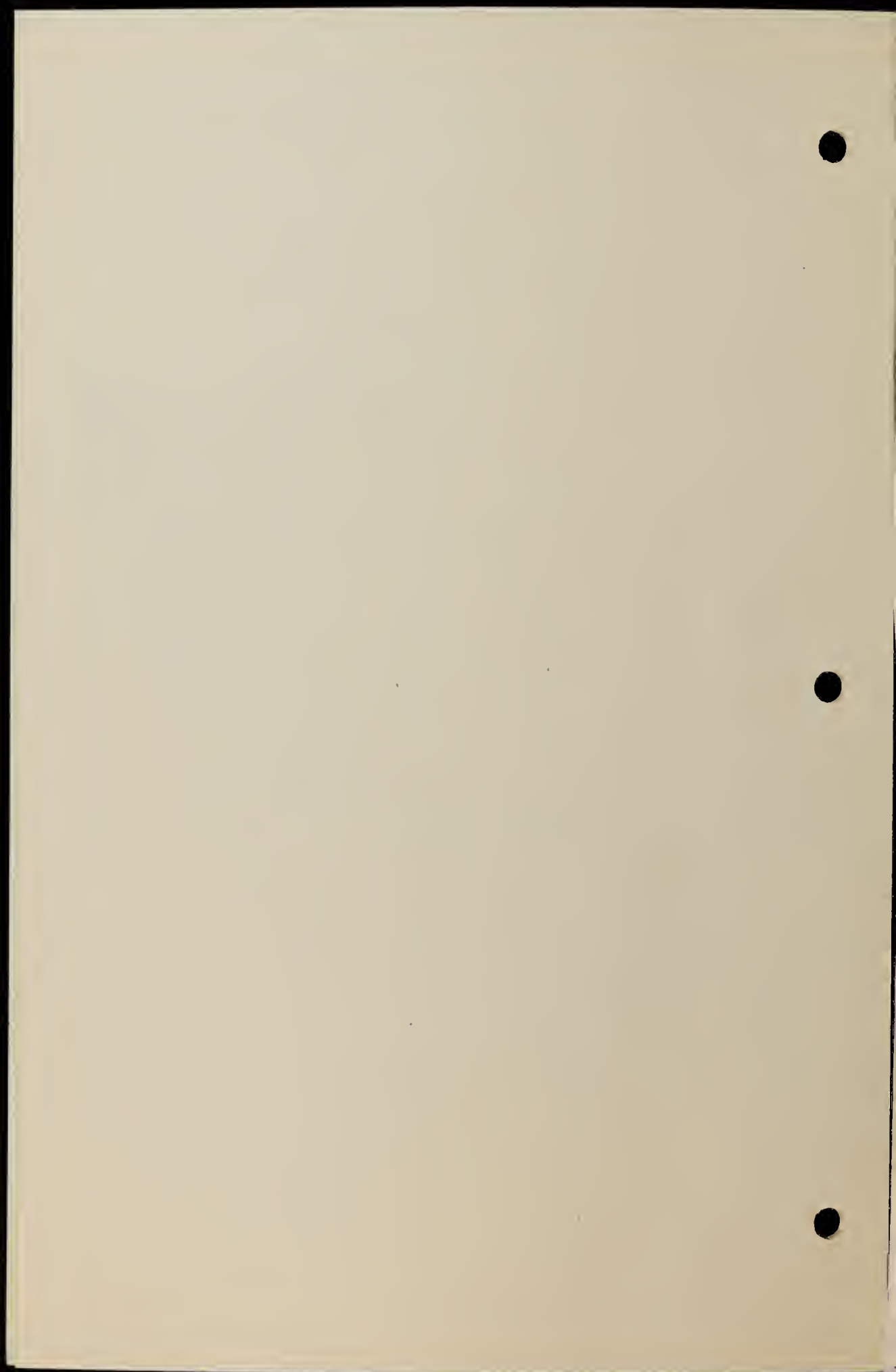
- also put in Kelley's
difference of opinions

79 - check depths

84 - quartz crystals = mosaic in volume
- check on thin lenses in level 5
on average between plant
remains. & feces - feces is better

break
slits





The final analysis was done after all the ^{vegetable and} artifact types of the whole area had been established and the cultural complexes delineated. Mac Neish then ^{revised} ~~re~~ numbered and named the various zones, phases and occupations in accordance with a system he had established for the other two areas. He then attempted to correlate this material and Kelley checked and corrected his results. In gross outline the stratigraphy, levels, layers, occupation and ~~stratigraphic~~ culture were as follows:

- Zone A - ^{top vegetable or brown stratum} ~~Zone A~~ - Occupation ⁸ ~~10~~ - level 1 - San Antonio
- Zone B - gray ash - Occupation ⁷ (level 2, 2a, 2b + 2c) - San Lorenzo
- Zone C - vegetable - Occupation ⁶ (level 3 in sfs E25, E20 + S5W5) - Flores
- Zone D - white ash - Occupation ⁵ ~~7~~ ?
- Zone E - vegetable - Occupation ⁵ ~~6~~ (level 3 except above) - Ocampo
- Zone F - gray ash - ~~Occupation 4~~ (level 4) - Ocampo
- Zone G - vegetable - Occupation ⁴ ~~5~~ (level 5) - Ocampo
- Zone H - yellow ash - Occupation ³ ~~4~~ (level 6) - Infiernillo
- Zone I - lower veg - Occupation ² (level 7) - Infiernillo
- Zone J - gravel - Occupation ¹ (level 8) - Infiernillo

CHAPTER II - Section II

Valenzuela's Cave (Tm c 248)

by David Kelley

Introduction

The study of these materials was partly supported by a grant from Harvard University (CHECK with Willey just how he wishes this acknowledgment made).

Tm c 248, or Valenzuela's Cave as we have called it, is a two-chambered cave located in the Penal de la Virgen (popularly called Flacco) tributary of Infernillo canyon in the Sierra Azul, north of Ocampo, Tamaulipas. Geologically, this limestone area, honeycombed with caves, belongs to the coastal zone, but physiographically it is one of the lesser ranges of the Sierra Madre. This cave is one of a series occupying nearly the same height above the canyon floor, apparently formed due to a slightly softer layer in the limestone. Portions of Tm c 248 lie directly under portions of Tm c 247, which makes the relationship between the two beds of gravel which form their respective floors rather puzzling.

The cave is somewhat more sheltered than Tm c 247, and remained pleasantly cool on hot days. The remarkable preservation of vegetable materials is sufficient to attest that most parts of the cave were free from excessive moisture, although there was some seepage in one corner. The cave is on the south side of the canyon, with one of its two entrances facing nearly north and the other approximately west by north (see map).

The two chambers (which are connected by a passageway in the rear) have been called for ease of reference the east chamber and the west chamber, as they would have been if oriented along the canyon, although in fact their compass directions do not warrant the terms. The conventional directions N, S, E, and W in which the squares were laid out are similarly modified from the true directions, which can easily be determined from the map. The west chamber is considerably higher and narrower than the east chamber, and opens more directly onto the canyon. It is less protected than the east chamber, but lighter and more cheerful. The east chamber has a low roof, so that we and several of our workmen bumped our heads on it on different occasions. At the time of the first occupation, when the deposits had not yet been laid down, the floor was enough lower so that this would not have occurred, but it must occasionally have bothered the inhabitants during the latest occupation period.

Excavation

The excavation was the first that Kelley directed, and his previous field experience was limited to assisting in Tm c 247, some participation in a student dig at Teotihuacan, and a summer digging as workman in the Roman and Anglo-Saxon sites at Southampton, England. The workmen were without experience, except for two who had aided in the excavation of Tm c 247. With these drawbacks, a number of mistakes were made, mostly involving insufficient recording of data, and often becoming apparent to us only during the analysis of materials. During the first half of the dig, the correlations of levels from one square to another were not always adequate; at that time, a standard series of levels was adopted, as the general sequence of the stratigraphy had become clear, and we

believe that the squares dug subsequently were correlated as adequately as was possible. Profiles were not always drawn as soon as a square was dug, but were left for later when the profiles themselves were left, since the men were digging faster than Kelley could keep up with them and at the time, operating on a rather meagre budget, it seemed to him inadvisable to leave them idle for long periods while he drew up profiles. Kelley would now draw up the profiles and let them wait, but at the time the presence of the actual profiles in the ground seemed sufficient. He had not then fully realized possible difficulties in correlating such profiles with square descriptions done at a different time.

The entire cave was divided into five-foot squares, marked off by wooden stakes. The squares were named after the stake in their SE corner which in turn was measured in conventionally determined directions N, E, S, and W of a zero stake. Both east and west chambers were measured from this zero stake. The first square dug, N10 E5, Kelley did himself in order to demonstrate to his new workmen what he wanted done. This square was dug by arbitrary levels. All other squares were dug by natural levels, with the exception that certain large pits from what was later called Level 2, including sometimes more than a complete square, were not originally recognized as pits and were dug by arbitrary levels, as natural levels were not apparent in them. Profiles were normally drawn only at five-foot intervals, and artifacts located only by square and level, although the actual digging unit was about one third of a square, and profiles were cleaned at such points before proceeding with the square. No attempt was made to establish sub-divisions within the gravel, although it was cleared one shovel's depth at a time, roughly, so that some estimate could be made as to whether an artifact

was near the top of the gravel or 'well down in', that is more than one shovel's length down, normally. All materials were screened, and the workmen were instructed to save many dubious artifacts and plant materials on the presumption that it was better to have things and decide to throw them away than to wish that you had saved things which were discarded. Even so, it is probably that many of the cruder stone tools were discarded. Only distribution analysis sufficed to convince us that some of my tool types really were artifacts. Our seven workmen alternated between digging and screening, with one man moving back dirt each day. All domestic plants and all plants which showed signs of having been used as food were saved in all squares, and all vegetable materials from some squares were saved. All bones were also saved.

The plan of excavation was to end up with three trenches, running north and south and connected by a cross trench on the north of the cave running east and west. This was done, and left standing parallel profiles at five-foot intervals across the cave, which were very helpful in correlating the levels. They were finished about half-way through the dig, and at this time the first batch of artifacts was taken out from the cave. Up to this time we had been packing the materials decidedly haphazardly, only making certain that level and square labels accompanied each bag of artifacts and/or vegetable remains, and only separating the most fragile artifacts, such as mats, from the vegetable materials. A twenty-mile (or more) trip with the artifacts loaded on mule back and often swaying distressingly convinced us that this was not the best way to transport artifacts, and that artifacts which were to be transported in this fashion (as they had to be) had better be more carefully packed.

On returning to the cave, Kelley set up the system of eight levels by which the remainder of the cave was dug. At the same time, he decided

to wash and number all stone artifacts and potsherds as they were excavated. The photographic record was decidedly skimpy, but in most cases there seemed no reason for photographs, except a punctilious regard for the record. Kelley does not believe additional photographs would have aided the analysis at any point where it would conceivably have occurred to him to take them. Most of the photographs were taken by Peter P. Pratt when he came out to the cave near the end of the excavations, although Kelley had one camera with him for use in case of possible burials.

In spite of these errors of procedure and occasional mishaps, we do not believe the analysis has suffered particularly from them. Generally speaking, in correlating the profiles, when a level in a square was rich enough so that several artifacts were found in it, it was distinctive enough so that it could satisfactorily be correlated with other squares. In only one case was there doubt as to whether a level belonged to the pre-Ceramic or Ceramic periods from its stratigraphic position, and in that case the complete absence of corn or pottery in a rich vegetable layer was sufficient evidence that the layer belonged to the pre-Ceramic periods. In most cases, the problems at issue are whether a particular level correlates with the general Level 3 or Level 5 in one case, or whether it is Level 5 or Level 7 in another. In one square a particular level may be Level 3, 5 or 7, but this is surrounded by pits from Level 2 which would have made it nearly impossible to determine in any case. In case of doubt, artifacts have been classed with the higher of two possible levels, as the frequent pitting from Level 2 made this a factor which had to be allowed for in analysis in any case. The accompanying table of correspondences of the levels in the different squares is the one which was used in analyzing

the artifact distributions. I believe that its probably occasional inaccuracies are not such as to seriously affect the analysis. To spend hours of work attempting to iron out the minor discrepancies between two profiles when the result would affect at most one or two artifacts seemed a disproportionate effort.

A preliminary analysis was done with MacNeish in Cambridge at Easter time, 1955. This analysis, because MacNeish had studied the other caves, was a great help to Kelley, particularly with regard to the stone artifacts, although we have since departed from it at a number of points.

The second analysis was undertaken by laying out all the artifacts by levels and then examining them minutely for likenesses and differences. When types were tentatively roughed out, chi squares were done on some of them to see if the distributions differed significantly. Naturally, two validly distinct types may have the same distribution, but a significant difference in distribution is usually a fairly good indication that the distinction between the types is valid. One surprisingly helpful result of this was the realization that the west chamber provided a test of the amount of pitting done in the east chamber, and its affect upon the artifact assemblage. The west chamber contained only deposits of the ceramic periods and of the gravels, so that the people had none of the earlier deposits to dig pits into. This means that an artifact type which is found in abundance in the Level 2 ceramic deposits of the east chamber, or on the surface, and which is completely lacking in the west chamber has probably been dug up from the earlier deposits, which the abundant pits make likely.

The final analysis was done after all the vegetable and artifact types of the whole area had been established and the cultural complexes

delineated. MacNeish then redrew, numbered and named the various zones, floors and occupations in accordance with a system that he had established for the other two caves. He then attempted to correlate this material and Kelley checked and corrected his results. In gross outline the stratigraphy, levels, layers, occupations and cultures were as follows:

Zone A	- top vegetable or brown stratum	- Occupation 8 (Level 1)	- San Antonio
Zone B	- gray ash	- Occupation 7 (Level 2, 2a, 2b and 2c)	- San Lorenzo
Zone C	- vegetable	- Occupation 6 (Level 3 in Squares E25, E20, and S5W5)	- Flacco
Zone D	- white ash		?
Zone E	- vegetable	- Occupation 5 (Level 3 except above)	- Ocampo
Zone F	- gray ash	(Level 4)	- Ocampo
Zone G	- vegetable	- Occupation 4 (Level 5)	- Ocampo
Zone H	- yellow ash	- Occupation 3 (Level 6)	- Infernillo
Zone I	- lower vegetable	- Occupation 2 (Level 7)	- Infernillo
Zone J	- gravel	- Occupation 1 (Level 8)	- Infernillo

Fig. - Cross-section drawings of the East Chamber
of Cave Tm c 248.

Overlying the limestone floor of the cave in both the east and west chamber, was a thick layer of gravel. Datum depth reveal that the top of this thick layer of gravel is slightly lower in elevation in the west chamber than in the east chamber. Both these layers of gravel, of course, are on a different height than the gravel in cave Tm c 247 and in cave Tm c 274. There also is a different thickness of this layer of gravel between the east and west chamber of Tm c 248. In Tm c 248 west chamber this layer of gravel varies from two feet to almost four feet in thickness, while in the east chamber it sometimes is only a few inches thick or does not appear at all and never is much more than two feet in thickness. Also, in the east chamber the gravel is thicker in the south end of the cave than in the north, that is, thicker in the interior, and there is a slight tendency for the top of the gravel to be on a slightly higher elevation along the side walls of this chamber. All these factors lead me to the conclusion that this layer of gravel was deposited by a stream that ran through the cave, carrying gravel with it, and somehow brought the gravel down from the assumed(?) underground passage from the Mesa above and deposited it on the floor of the cave. Also these factors of the gravel, which we have just spoken about, would tend to be strong evidence against its having been deposited by the stream at the bottom of the arroya, 300 feet below the mouth of the cave. We still do not know where it got the gravel from on top of the Mesa, and exactly what passage it went through, but this seems to be the most logical explanation that we found for it. Obviously, the gravel, called Zone G, was deposited during a wet period.

In a few spots in the top six inches of the gravel we found twelve artifacts and 86 fragments of bone. There seems to be little doubt that these are in the gravel and not intrusive into it, and I cannot help but

believe that this represents an occupation, Occupation 1, that was deposited before the final period of deposition of the gravel. Exactly what sort of an occupation this first one was, cannot be determined because the gravel deposition had almost completely destroyed the original floor. However, from the artifacts, the bones and the little vegetable material we can tell something about the subsistence pattern of these people. There were 86 bones as well as a number of implements that might somehow be connected with hunting. The Infernillo points, the thin and thick side-scrapers, the two small discoidal end-scrapers, the two bone awls with pierced basal ends might somehow be connected with hunting. There also were a few fragments, twenty-two in all, of identifiable vegetable material. Eighteen of these twenty-two are pods of runner beans. There are also a number of implements that would be connected with food gathering. These include pebble smoothers, two flat scraping planes and flat pebble chopper, and four thin saw-like choppers. This subsistence pattern plus the limited number of artifacts would seem to indicate that this first occupation was a very temporary one, made by a small group of people who did slightly more hunting than they did wild-plant collecting. The various artifacts in this top part of the gravels, are sufficiently diagnostic to allow us to classify it as being an occupation of the Infernillo phase. The Infernillo point, the pebble smoother, the pebble chopper, awl are Infernillo diagnostic traits. The disc scraper, the flat scraping planes and some of the other traits are of more general nature, but they usually also appear in Infernillo remains.

believe that this represents an exceptionally good example
of the type of the first period of development of the group.
Exactly what sort of an organization this first one was, cannot be
determined because the general position had almost completely changed
the original form. However, from the evidence, the house and the
little vegetable garden which we can still see standing about the entrance
to the house, there were 35 houses as well as a number of
buildings that were connected with the main house. The
Interim House, the main and only side-entrance, the one which
the main entrance, the one which was the main entrance, the
main entrance was connected with the main house. There was a few
more, twenty or so, of smallish vegetable gardens. Several
of these were in the form of small plots. There was also a number
of buildings that were connected with the main house. These
included vegetable gardens, the first vegetable garden and the house
chapel, and had this same-like character. These vegetable gardens
show the limited number of buildings which seem to indicate that this
first development was a very important one, made up of a small group of
people who did not really have anything more than a little vegetable garden.
The various buildings in this top part of the house, are all built
on a platform to allow us to clearly see the organization of the
interim house. The Interim House, the house which was the
people chapel, and the Interim House, the house which was the
the first vegetable garden and some of the other houses are of this
general nature, but they really show a great deal of Interim house.

Fig. -

Over the gravel and over the rock, where no gravel appears, was a thin, reddish layer full of vegetable material which is called Zone I, Occupation 2, and this only occurs in the east chamber of the cave. It is a relatively thin stratum but it is quite extensive. In total it makes up about 150 cubic feet of refuse. There are a number of features that are connected with it which include a hearth, a pit full of vegetable material and one shallow depression with a mat in it. Also laid on this layer in a number of spots are fragments of mats with grass that might also be thought of as being beds. The large extent of this layer leads me to the conclusion that we are probably dealing with a macro band who were here, but for a very short time. A little pollen analyzed from Occupation 2 revealed that these people were here when the climate was a good deal wetter than it is at present. This vegetable layer contained quite a lot of materials. There are 222 fragments of bone in it as well

Fig. 1

Over the gravel and over the rock, there is a gravel layer, which is thin, reddish layer full of vegetable matter, which is called zone 1. Occupation 2, and this only occurs in the west chamber of the cave. It is a relatively thin stratum and it is quite extensive. In total it makes up about 100 cubic feet of volume. There are a number of features that are connected with it which include a layer, a thin full of vegetable matter and one which is called zone 1. This layer is thin and light layer in a number of spots and fragments of bone which were thin might also be thought of as being thin. The large extent of this layer leads us to the conclusion that we are probably dealing with a single layer which were here, but for a very short time. A little better exposed from Occupation 2 revealed that these people were here when the climate was a good deal warmer than it is at present. This suggests layer contained quite a lot of material. There are 222 fragments of bone in it as well.

as two identified deer fragments, and a bone of a skunk. The Infernillo and Almagre-type points, as well as the atlatl foreshaft fragments all would be connected with hunting. More indirectly with hunting would be the pierced based awl, conical wedge, large disk scraper, and the flake side-scrappers. Almost as numerous as the evidence of hunting as that of food gathering. 185 wild plant remains occurred. There also were six wild squash seeds and some wild runner bean fragments. Humped and flat scraping planes, scraper-graver-like objects, disk choppers, pebble choppers, slab choppers, and a fragment of a digging stick, as well as some of the basket remains; all would seem to be connected with wild plant collecting. In the feces and in the refuse there were two small fragments of what seemed to be domesticated plants. In the feces were some peppers as well as some pumpkin seeds and there was a definite fragment of a pumpkin rind found within the refuse. In total I would guess that probably 50 per cent of these people's subsistence came from hunting and 50 per cent came from wild plant collecting with an infinitesimal amount coming from agriculture. The three or four feces remains examined would seem to hint that actually there was more plant collecting and hunting done by these people, but then again the meat remains are not quite so well preserved in the feces.

Besides these tools connected with subsistence we have some evidence of other activities as indicated by their material culture. The wooden Atlatl fragment, the number of whittled sticks seem to hint that one of their activities during their occupation in the cave was wood work and the chipped stone gouge may have been one of the tools of their trade. Perhaps the most numerous items are connected with another activity, that of weaving. There are a number of strands of string, most is of Z-twisted hard yarn and had been made into either two or four-cord rope.

A minor variety is some S-twisted hard yarn which has been made into either two-yarn cord or three-cord rope. Tied on some of the string is a square knot and a Lark's Head knot. Some of this string has been woven into bags or baskets. Here the nets and bags are somewhat difficult to distinguish one from the other. There is a loop twine basket but it is sufficiently flexible and also so loose-knit that it would be perfectly justifiable to call this so-called basket a net bag. There also is a fuigan-stitch-type basket. Beside these remains in the beds and in a couple of the pits, there are a number of fragments of chequer-weave mats. There also is one very small fragment of a twilled mat. A few snail beads indicate that these people even at this early stage were using some ornaments.

Diagnostic of this horizon are the Infernillo points, the pointed base atlatl foreshaft, the pierced bone awl, the scrapers graver objects, the disk chopper, the long digging stick, the fire tongue, the fuigan bag, the loop twined basket or bag, and a one-over-one mat. All of these are good Infernillo traits. Most of the other traits are of a fairly general nature but also occur at other components of the Infernillo phase.

Overlying much of the vegetable floor, Zone I, is a yellow ash layer. It appears in patches over the lower floor and actually seems to be some sort of an occupation. Much of it may have been dug away by peoples who excavated in the cave during Occupation 7 or 8 time period. The pollen from this layer have analyzed and reveal that the layer was laid down during a wet period. Some carbon from Zone H has been analyzed and reveals the Carbon 14 date of 8,200 years ago \pm 400. Estimating this relatively thin two to four inch thick layer of refuse we would guess that it composes about 16 cubic feet of refuse. Much of it has been burned and it only appears in the east chamber. We were unable to discern any definite features extending down from this layer and we do not have a large amount of archaeological material from it. The relatively small area occupied in the cave which seemed to indicate that we are dealing with a group somewhat smaller than the previous occupation, perhaps a micro band. However, the layer's thickness plus some of the vegetable material which include nuts and squash would seem to indicate that this small group occupied the cave probably for a whole season or perhaps a summer.

We have some indication of the subsistence pattern of these people. 149 bone fragments were uncovered and many of these had been split and scraped for marrow. Some bones of a deer, skunk and a bison also occurred in this layer. Artifacts connected with hunting are relatively rare and include some side-scrapers, small discoidal end-scrapers, and a fragment of what seems to be an Abasolo point. More numerous than the evidence of hunting are the evidence of wild plant collecting. There are 620 wild vegetable remains, many of them are agave, and a few of them are of opunthia. There are a few pieces of tripsicum grass among these materials. There also are a fair number of implements that might be connected with

Investigation of the section shows that it is a typical section. It appears in part over the lower floor and actually seems to be some sort of an accumulation. None of it may have been any way.

By looking at the section in the days during the section 7 or 8 days. The section from this layer is very well exposed and reveals in part. It is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer.

It is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer.

The relatively small size of the section in the case which seems to indicate that it is a typical section. It is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer.

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We have some indication of the distribution of these people. It is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer.

It is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer.

There are also some evidence of other people. It is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer.

There are also some evidence of other people. It is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer. Some of the material from this layer is very thin and shows a very thin layer.

wild plant collecting including some baskets,^a/humped scraping plane, flake choppers, saw-like choppers, and a digging stick. Also, there is a little bit of evidence that these people used domesticated plants. The evidence consists of a few fragments of gourds and a few fragments of pumpkin. One of the feces also had what might be part of a pepper in among these remains. On the basis of both the plant material and the feces material this cave seemed to agree we would guess that perhaps 75 per cent of this sustenance came from wild plant collecting and about 24 per cent from hunting and perhaps one per cent from agriculture.

Other cultural material and activities and that of subsistence are fairly limited. Most of these seem to be connected with weaving. There some yucca strands and some soft S-twisted yarn made into two-yarn cord, there is some Z-twisted hard yarn which is also made into two-yarn cord. Some of the string and yucca strand have tied overhead knots and square knots. Some of the string also has been made into loop-twined baskets. Here I say baskets rather than basket-like nets in that the coil element of these loop-twined baskets is fairly rigid. There are two fragments of a one-over-one mat, and also in that level are a series of quartz crystals that the inhabitants seemed to have saved for some reasons or other.

On the basis of the Abasolo point, the one-over-one mat, the loop-twined basket as well as the subsistence pattern we have classified this third occupation as being a component of the Infernillo phase. Most of the artifacts that have been found in this layer, are of quite a general nature and are just as diagnostic of Ocampo as they are Infernillo.

With regard to the question of the possibility of a general theory of the structure of the human mind, it is clear that such a theory is not only possible but also necessary. The study of the human mind is a complex task, and it is only by developing a general theory that we can hope to understand the various aspects of human behavior. This theory should be able to account for the different levels of consciousness, the various functions of the brain, and the complex interactions between the mind and the environment. It is only by such a general theory that we can hope to make progress in the study of the human mind.

Other important material in this field is the study of the development of the human mind. This study is of great importance, for it is only by understanding the development of the mind that we can hope to understand the various aspects of human behavior. The study of the development of the mind is a complex task, and it is only by developing a general theory that we can hope to understand the various aspects of human behavior. This theory should be able to account for the different levels of consciousness, the various functions of the brain, and the complex interactions between the mind and the environment. It is only by such a general theory that we can hope to make progress in the study of the human mind.

On the other hand, it is clear that the study of the human mind is not only possible but also necessary. The study of the human mind is a complex task, and it is only by developing a general theory that we can hope to understand the various aspects of human behavior. This theory should be able to account for the different levels of consciousness, the various functions of the brain, and the complex interactions between the mind and the environment. It is only by such a general theory that we can hope to make progress in the study of the human mind.

Fig. - Zone G, Occupation 4 of Tm c 248.

Overlying the yellowish layer of Occupation 3 is a more definite vegetable layer which is called Zone G, Occupation 4. This layer appears as a series of patches throughout the cave and is never more than a couple of inches thick. I greatly suspect, that much of the original extent of this layer has been disturbed by pits from Occupations 7 and 8. On the basis of the layer and the reconstructed total extent of the layer there seems to have 50 cubic feet of refuse. One pit full of vegetable material extended down from the layer. Due to its limited extent and relative thinness, we have guessed that a micro band laid down this layer and probably left in the season. The gourd and squash and bean remains seem to indicate that this season was during the late spring or early summer. Pollen from this layer has been analyzed and seems to indicate that these people occupied Zone G during a period that was as dry as the present.

52 bones, all unidentifiable, an Abasolo and a Tortugas point, and a small discoidal scraper are the only indications we have that these

Fig. 1. - Zone 2, Description A of the 2nd.

Investigating the following layer of Description 2 is a more detailed
vertical layer which is defined as Zone 2, Description 4. This layer
appears to be a lot of various fragments the size and is never more
than a couple of inches thick. A typical fragment, that each of the
original layers of this layer has been broken up into from 1000 to
7 in 2. In the case of the layer and the reconstructed layer
of the layer there seems to have 20 some feet of thickness. The 20
of various small objects, some from the layer. This is the
most common fragment, we have found that a lot of small
from this layer and commonly left in the layer. The ground and
and some of the small objects that this layer has broken into
smaller or smaller fragments. Below this layer has been analyzed and
found to indicate that there are small objects that are small
that are as big as the fragment.

It would, all uninterpretable, as it is not a continuous point, and
a small detailed section are the only indications we have that there

people did any hunting. Much more numerous than the hunting remains are those of wild plant materials. We have 483 wild plant materials, mostly huapillas, agave and opunthia, as well as 16 pods of runner beans, 11 fragments of wild squash. The humped and flat scraping planes and the saw-like chopper may have been implements used to grind up these wild materials into relatively palatable form. For the first time in this layer we have considerable evidence of agriculture. There are 23 rinds of pumpkin, 13 rinds of gourd, and in the feces seeds of both these plants. There also are seeds and pods of domesticated beans, both the yellow-seeded variety as well as the long red-brown variety. On the basis of these materials we have estimated that the subsistence pattern was about 75 per cent plant collecting, 20 per cent hunting, and 5 per cent agriculture. The few animal feces give a slightly different picture in that the majority of plant remains found in the feces are of cucurbitas. There are a few pods of either wild runner beans or domesticated beans, and three fragments of bone. On the basis of this it would appear that probably 50 or 60 per cent was wild plant collecting and 20 per cent agriculture and 20 per cent hunting. Again, I suspect that an average of what has been found in the feces and what definite evidence from animal and plant remains have been found would give us a logical estimate of just what the subsistence pattern was.

The only other tools we have not connected with subsistence have to do with the scraping of skin. A small discoidal scraper, side-scrapers, and perhaps the humped and flat scraping planes, would seem to indicate that while these people lived in the cave they did some skin scraping. However, their greatest activity during this brief occupation was in weaving. Hard and soft S-twisted yarns appear, and many of these have been twisted into two-yarn cord. There is a lesser amount of Z-twisted hard and soft

yarn which also has been S-twisted into two yarn cord. Overhand knots appear on yucca strands, and larks heads knots appear on the string. There also are two small fragments of mats, one is a one-over-one mat while the other is a twilled mat.

The Abasolo and Tortugas points, humped and flat scraping planes and the dominance of S-twisted yarn as well as the subsistence pattern allow us to classify Zone G, Occupation 4, as being a component of the Ocampo phase. The other artifacts not mentioned are of a more general nature but tend to confirm our Ocampo classification.

Fig. - Zone F, Level 4

Overlying Zone G in most of the cave are small patches of grey ash. Some artifacts ~~have been found~~ were found in this grey ash but these have been included as part of Occupation, Zone G. In actual fact this so-called grey ash layer is more than half composed of cave dust, and I believe represents a time when the cave was unoccupied during a dry period when cave dust and wind-blown sand and ash covered the earlier

from which also are derived the two other series, the first of which is the series of the first order, and the second of which is the series of the second order. The first series is the series of the first order, and the second of which is the series of the second order. The first series is the series of the first order, and the second of which is the series of the second order.

The series of the first order, and the series of the second order, are the series of the first order, and the series of the second order. The first series is the series of the first order, and the second of which is the series of the second order. The first series is the series of the first order, and the second of which is the series of the second order.

III. - The first series.

The first series is the series of the first order, and the series of the second order. The first series is the series of the first order, and the second of which is the series of the second order. The first series is the series of the first order, and the second of which is the series of the second order.

occupation deposit.

Fig. - Zone E, Occupation 5 in cave Tm c 248

Overlying the grey ash was an extensive vegetable layer which varied from 1 to 3 inches thickness. This appeared somewhat as patches in the east chamber, but I suspect that once these patches were all connected and it was fairly continuous and quite a large layer. Based on this assumption we have estimated that Zone E, Occupation 5, had about 80 cubic feet of refuse in it. Extending down from this layer were two pits filled with vegetable material and one of them had mats associated with it. There also were in this layer a number of burned patches and a few fragments of fire-cracked rock, that might indicate hearth areas. On the relative great size of the area occupied I would estimate that we are again dealing with a macro band who lived in the cave for a season. Pollen analysis has been done on some of soils of Zone E and reveals that we are dealing with a dry period. A few sticks have been analyzed by Carbon 14 analysis and reveal a date of 5,650 years ago.

A large amount of the remains that can be connected with their subsistence pattern were uncovered in this layer. 46 unidentifiable bones were uncovered. However, more and better evidence that these people hunted comes from the artifacts that occurred in the layer. These include an Abasolo projectile point, a pointed based atlatl foreshaft, a large end-scrapers, thick and thin side-scrapers, small disc scrapers, and conical and split wedges. However, the predominant activity in the subsistence line of these people seems to have been plant collecting. There are 805 vegetable remains that were identified and these include ten pods of wild runner beans and some pollen of panicum. Humped and flat scraping planes, scraper gravers, disk choppers and saw-like choppers as well as various bags may have been implements used in collecting wild plant remains. The evidence of the use of domesticated plants is relatively slim. It consists of only a few specimens of pumpkins and gourds. Thus I would guess that probably 80 per cent of their subsistence was based on wild plant collecting, about 18 per cent of hunting, and around 2 per cent on domesticated plants. These estimates based on food stuffs are ⁱⁿ radical variance with our evidence of four feces. In the feces we found considerable evidence of peppers, some beans remains that probably are domesticated, a small amount of wild plant material, mainly pods of the wild runner beans, and some animal tissue. Also rather surprisingly we found corn silk and corn pollen. On estimate of their subsistence pattern based on feces would seem to indicate that perhaps 25 per cent of their subsistence came from domesticated plants, 50 or 60 per cent from wild plant collecting, and the remaining 15 or 25 per cent from hunting.

Other activities which these people seem to have done while in the cave was the scraping of skins. The numerous scrapers and the conical

Large amounts of the material that can be recovered with this method
are usually recovered in this way. It is usually found that
the material, however, does not contain evidence that these people
located some time in the vicinity that occurred in the layer. These
include in the middle of the layer, a number of small objects,
a large number of small objects, which are also of interest, small glass fragments,
and several small objects. However, the collection of objects in the
evidence line of these people seems to have been that of a collection.
The material of the evidence remains (see the collection and the evidence
the case of the material found and some collection of material. However, the
the material found, which is also of interest, also objects and the
objects as well as various objects and have been recovered in the
layer with other material. The material of the case of the material
found is relatively small. It consists of only a few objects of
material and some. Then I would think that probably 50 per cent of
the material found was based on the material collection, about 15 per
cent of material, and about 2 per cent of material found. These
evidence found in the material evidence with the evidence
of the case. In the case of the material evidence, the material
found was found in the material evidence, a small amount of
the material found, which is also of interest, and some
material found. Also, which is also of interest, the material found
found. On the basis of the material evidence, the material found on these small
objects to indicate that the material found of the material found
the material found, it is also of interest from the material found
and the material found is of 25 per cent from material.

Objects of the material found, which are also of interest, in
the case of the material found. The material found and the material

and split wedges that might have been used for tying down skins certainly would be ample evidence of this. The gouge, the various pieces of whittled and cut wood as well as the atlatl foreshaft and the wedges themselves would also seem to say that they did some woodworking. A fragment of a braiding stone also may have been used for polishing of wood. The dominant activity, however, seems to have been connected with weaving and here we have quite a bit of material all of which is varied. The most numerous is the string. There are Z-twist two-yarn cord and two-cord rope, there is hard S-twisted yarn made into two-yarn cord and there are a number of fibres of just simple Z and S-twist yarn. These strings and various yucca fibres have been tied into over-hand knots and larks heads knots as well as square knots. Some of the string had been used to make a simple coiled bag. However, the making of mats and mat-like bags or baskets was a very important activity.

Yucca fibres have been used to make the three-over-three type twilled mat, and there were also simple twilled mats with two-over-two. Many of these mats with various kinds of borders have been folden and sewn up at their two edges so they became baskets. One of these baskets had a three-over-three center section and a two-over-two twilled side section; another had just exactly the opposite with a two-over-two strip center section and a three-over-three ~~strip~~ down the side. There was another one which had two-over-two center, then a single line made thre e-over-two and then a two-over-two twilled strip along its edges. There also was one basket which looked to have been of a relatively square shape, made by simple twilling. None of the other complicated coil baskets seem to have occurred at this time. Besides basket making, they seem to have made some beads out of snail shells.

In term of diagnostic traits the Abasolo point, the small disk

scrapers, the humped and flat scraping plane, the scraper graver, the gouge, the abrading stone and the various kinds of twilled or twilled bordered baskets and mats, seem to indicate that Occupation # 5, Zone E, is a component of the Ocampo phase. The subsistence pattern tends to confirm such classification.

Overlying Zone E in a few spots and always underlying another vegetable layer, Zone C, Occupation 6 was a white ash layer. This again was more than half composed of cave dust and seems to represent a time when the cave was not occupied.

Fig. - Zone C, Occupation 6 of cave Tm c 248.

Overlying the white ash layer in various patches throughout the cave was Zone C, Occupation 6, a relatively thin vegetable layer. In many cases this layer was confused during excavation with Zone E, Occupation 5. However, it seems to be definitely separated from it and in some cases over it. The layer itself has been badly destroyed by pitting from above and even a rather ^{generous} ~~generous~~ ^{not} estimate would/allow it more than 25 cubic feet of refuse. Thus I would guess that it represents an occupation for less than a season by a micro band. Vegetable material reveals that again we seem to be entering a period

that was slightly more wet than at present. Some of these vegetable materials have been dated as 3,945 years ago.

Materials giving indication of the subsistence pattern are extremely numerous. There were 201 unidentifiable bones and one bone definitely from a deer. With these bone remains representing hunting there are also some possible hunting tools such as the Abasolo point, an atlatl mainshaft, a flat based atlatl foreshaft, and three Gary stemmed points, as well as a cane knife and a piece of a spring trap. These hunting indications, however, are insignificant when compared with the wild plant remains, which had 3,100 vegetable remains including wild squash, wild bean, tripsicum grass, panicum and amaranth. The only tools besides obvious baskets would be connected with plant collecting were the humped back scraper and a saw-like chopper. A number of domesticated plants were used including peppers, yellow-seeded common beans, squash, gourds, and a few cobs of corn. In terms of counts of food stuff it would seem that we have a horizon that is about 80 per cent based on wild plant collecting, perhaps 10 per cent on agriculture, and 10 per cent on hunting. Four feces from this horizon have been examined and give a very different picture. Two of the feces have beans and bean pod remains in them. This could be either wild or domesticated beans. The other two feces, however, have corn and beans in them and the final one has quite a bit of corn, pepper, domesticated beans and some panicum. On the basis of these materials it would seem that probably 60 per cent of their subsistence was gained from ^{wild} ~~domesticated~~ plants and the other 40 from domesticated plants. Again I suspect that an average/against of the feces estimate food stuff estimate would give us a fairly true picture. This true picture might reveal that there is about 75 per cent of ~~their~~ Their diet from wild plant, 20 per cent from domesticated plant, and 5 per cent

that was slightly more wet than at present. Some of these vegetables
materials have been dated as 3,915 years ago.

Materials giving indication of the subsistence pattern are extremely
numerous. There were 501 identifiable bones and one bone definitely
from a deer. With these bones remains representing hunting there are
also some possible hunting tools such as the arrowhead, an arrow
head, a flint based arrowhead, and three very slender points,
as well as a bone knife and a piece of a spring knife. These hunting
instruments, however, are insignificant when compared with the wild
plant remains, which had 3,100 vegetable remains including wild wheat,
wild bean, wild pea, grass, panicle and anthers. The only tools besides
obvious bones would be connected with plant collecting were the woven
back scraper and a saw-like chopper. A number of domesticated plants
were used including peppers, yellow-seeded common beans, a squash, gourds,
and a few cobs of corn. In terms of counts of food stuff it would
seem that we have a horizon that is about 60 per cent based on wild
plant collecting, perhaps 10 per cent on agriculture, and 10 per cent
on hunting. Four tools from this horizon have been examined and give
a very different picture. Two of the tools have been and been put
together in them. This could be either wild or domesticated beans. The
other two tools, however, have been and been in them and the first one
has quite a bit of corn, pepper, domesticated beans and some lentils.
On the basis of these materials it would seem that probably 60 per cent
of the subsistence was gained from ~~domesticated~~ plants and the other
of the ~~domesticated~~ plants. When I suggest that an average of
food stuff estimate would give us a fairly true picture. This is
therefore right reveal that there is about 70 per cent of wild plants that
from wild plants, 20 per cent from domesticated plants, and 5 per cent

from hunting.

Beside subsistence activities, skin scraping and skin preparation seems to have been one of the things they did in the cave. The hammered split wedges, the antler piercer, the scrapers and the knife, all could have been connected with the preparation of skins. The chissled scraper-like mano also may have been used on them. As with the previous horizons, weaving is very important. They are mainly S-twisted yarns in this horizon but there are a few strands of Z-twisted yarns, some of this is made into two-yarn cord. Overhand knots and square knots tie up some of this string or rope or cord, as well as yucca strands. Much of these strings occurs with a simple loop net.

There, however, is also a piece of a fuigan basket made on a very solid foundation that is somewhat different than anything we have. Twilled mats are the predominant form; one mat with a three-over-three border and a twilled setter had been made into a basket like the previous Ocampo horizon.

The Gary stemmed points, the flat atlatl foreshaft, the solid foundation fuigan basket, the dominance of twilled mats, and the subsistence pattern, as well as the archaeological date would seem to indicate that this horizon, Occupation 6, is a component of the Elacco phase. Many of traits, of course, are a continuation from Ocampo, but there are enough significant differences to keep it from than classified as Ocampo.

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active independent activities, which sometimes and often

seem to have been one of the things they did in the cave. The

limited shift values, the larger pieces, the neurons and the

all could have been compared with the probability of error. The

shifted perceptual-motor units also get into some kind of

the previous neurons, working is very important. They are

independent units in some neurons but there are a few elements of

the way, some of which is made into two-year units. Overlaid

separate units the no sense of this being on top of each, as well as

some neurons. Some of these things could be a simple two

There, however, is also a piece of a larger system on a

solid foundation but is somewhat different than anything we

Two of these are the fundamental form; one has a three-dimensional

number and a twelfth order and then into a number line

previous groups, which

The first group, which, the first group, which, and

the second group, which, the second group, which, and

the third group, which, the third group, which, and

the fourth group, which, the fourth group, which, and

the fifth group, which, the fifth group, which, and

the sixth group, which, the sixth group, which, and

the seventh group, which, the seventh group, which, and

Fig. - Zone B, Occupation 7 of cave Tm c 248.

In both the west and east chamber of the cave overlying the early deposits was a thick layer of grey ash with occasional burnt patches in it and occasional vegetable layers. This is called Zone B, and seems to represent Occupation 7. Actually it may be a number of individual occupations that we are unable to discern because the vegetable material is not as well preserved. There also is considerable evidence in terms of the disturbance of the lower layers that the people of Occupation 7 were pitting in the earlier layers and bringing up earlier materials as well as destroying their own floor levels. In terms of refuse there are over 900 cubic feet of refuse in this Zone B. On the basis of this plus the numerous burnt areas that might be hearths, I would suspect that Occupation 7 was by a macro band for more than a single season. In this large layer there was considerable evidence of hunting. There were 1,143 unidentifiable cracked, split, burnt animal bones. There also were identifiable animal bones of buffalo, deer,

goafer, possum, mouse and birds. Artifacts that might be connected with the hunt are extremely numerous. They include a whole series of projectile points which I will briefly enumerate: the Palmillas, San Lorenzo, Catan, Matamores, Gery, Flacco, Nogales, Tortiga, El Magre, Abasolo and Infernillo points occur in this level. All, except the San Lorenzo and possibly the Catan and Matamores points, would be considered to be atlatl points. There also are atlatl mainshafts, arrow mainshafts, fragments of bows and part of a spring trap. Other objects that might be connected with animal remains are the bone needle and ore, the scraper handle, the conical and split wedges, the thin and thick scrapers, the elongate scrapers, the small chipped disks, the crudely chipped medium disk scrapers, the triangular end scrapers, the chipped grill, the small chipped, bifacial disk, and chipped knives. Thus there is considerable evidence that at this time this macro band probably was staying in the cave through a number of months, for doing some hunting. Vegetable material is still, however, quite numerous and there were over 2,000 plant remains. Many of these are desert type plants such as huapilla, opunthia and agavia. However, there are a number of fragments of wild runner beans and wild squashes. Artifacts that can be connected with this plant collecting are less numerous. There are the baskets and bags. There are also humped and flat scraping planes, scraper gravers, large chipped disks and pebble choppers, and saw-like choppers. Agricultural remains represent another big section. These include gourds, pumpkins, warty squash, and pepper seeds; at least two varieties of beans, lima beans, corn, some cotton seeds, and there are some cigarette butts in here. The pottery, of course, could have been used to cook some of these plant remains in. A few feces occurred and they reveal that about one third of the eating materials was meat and the other third wild plant, and

the remaining third was domesticated plant remains. This is more or less in agreement with the preserved food stuff remains except that it gives more emphasis to hunting than they do. In terms of cultural activities other than subsistence we pointed out that there is considerable evidence that these people were scraping skins, and the needles and awls and the choppers and scrapers, and so forth. There also are a couple of celts in here which indicate some wood work. The antler flaker and the many flint chips would indicate that they were making projectile points. Two other activities are important, one is ~~the~~ weaving. Great quantities of string appeared throughout Zone B. Most of it is S-twisted soft-fibre yarn; this is made into various kinds of cord and rope. There were little amounts of Z-twisted cotton yarn. However, these were a minority. Pieces of yucca and the string were tied into various overhand, square and granny knots, and there were a couple of pieces of fibre that had been woven into yucca rings. There also were a couple of Caring loops. A number of baskets of both the bowl and pan shape were made and these are all of the split stitch under foundation variety. Twilled mats occurred and are usually square and quite large, the sort that could be used for bedding. There is one difference earlier ones in that the decoration in these is done by weaving different coloured elements through the mat. Other activities which have an aesthetic implication are the shell and bone beads that appeared in the refuse. Pottery is not overly numerous and is mainly Ocampo corrugated, though San Lorenzo smooth and San Lorenzo black appear. There is one small piece of San Lorenzo engraved, and there also is a cherd of Palmillas engraved. In a deep pit in the west chamber a burial wrapped in two brightly coloured twilled mats occurred. Though it was in roughly the same position and in bundles than some of our earlier Mesa de Guaje burials, it had none of the others numerous

features, and it was relatively simple. Thus beside occupying the two caves, these San Lorenzo people also put a burial in their occupation and refuse.

In terms of cultural affiliation I suspect many of the artifacts found in this layer might have been dug up from earlier horizons. There are a number that are definitely diagnostic of the San Lorenzo phase and these include the San Lorenzo pottery types, both the smooth, brushed, and black engraved, the Ocampo corrugated ware, the San Lorenzo points, triangular end scrapers, the small bifacially chipped disks and drills, as well as the twilled bi-chrome mat. Thus Zone B, Occupation 7, becomes another component of the San Lorenzo phase.

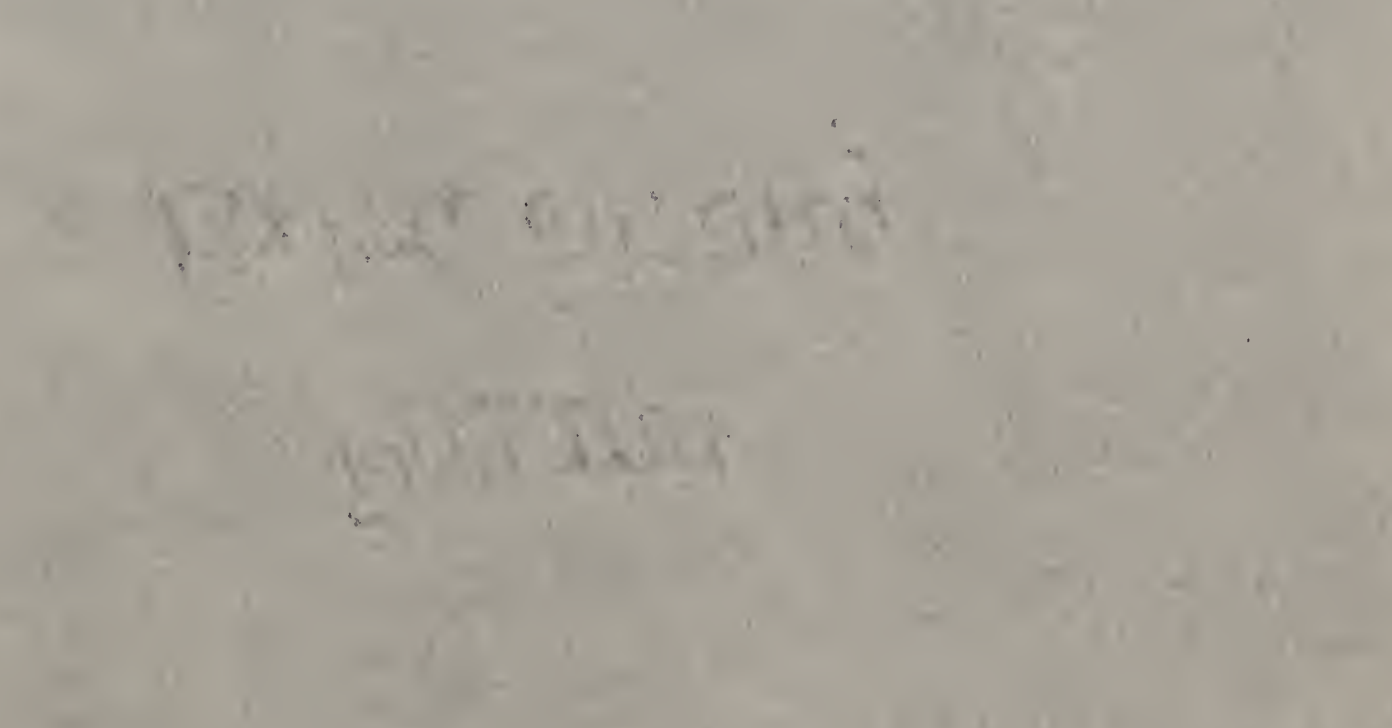


Fig. - Zone A, Occupation 8, in cave Tm c 248.

Overlying the interior of the cave in the west chamber was a brownish layer often with well preserved vegetable material in it. This and part of the top layer of the more frontal part of the cave, is considered to be Zone Z, Occupation 8. This layer covers a considerable part of the cave and varies between one and six inches in

...and it was relatively simple. The results accompanying the two
...these San Lorenzo people that in a general sense vegetation and
...relates.

In terms of cultural affiliation I suggest many of the artifacts
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There are a number that are definitely diagnostic of the San Lorenzo
phase and these include the San Lorenzo pottery types, both the
smooth, brushed, and black wares, the Ocuato decorated ware, the
San Lorenzo points, bifurcated and notched, the small triangular
notched flints and drills, as well as the drilled 45-degree wedges. Thus
Zone B, Occupation 1, becomes another component of the San Lorenzo phase.

Fig. 1 - Zone A, Occupation 2, in cave 7m c 346.

Overlying the interior of the cave in the west chamber was a
...remains layer often with preserved vegetable material in it.
This and part of the top layer of the cave formed part of the cave,
is considered to be Zone 2, Occupation 2. This layer covers a con-
siderable part of the cave and extends between one and six inches in

thickness. There are three pits that have been dug down from and a number of areas that had mats in them on top of grass; they probably were beds. On the basis of the large extent of the area, about 600 cubic feet, as well as the numerous beds, I would suspect that this represents an occupation by a macro band for at least a season. Pollen and floral material indicate the climate was almost exactly as it is today.

Subsistence pattern data is fairly good. 128 unidentifiable split, burnt and broken bones were found. Artifacts that might be connected with the hunt were the Palmillas, Catan, Matamores, Gery, Tortugas, Nogales, Almagre, and Infernillo atlatl points as well as the Fresno and Starr arrow fragments, as well as the arrow shaft. There also was a trigger and a couple of spring traps. Winged flint drills, small disks, small bi-facial disks, thick and thin side scrapers and elongate end scrapers could have been used to prepare the skins of animals taken in the hunt. Much more numerous than the animal bones were the wild plant materials, and here 1,360 remains were uncovered. Many, many of these are runner beans, but again they are a great deal outnumbered by desert plants such as yucca, agave, and huapillas. Pebble manos, the clay and stone pestles, the humped and flat scraping planes, and the saw-like choppers may have been used to prepare these wild food stuffs. Agricultural remains are fairly numerous and there are a number of cobs of corn. There are a few peppers and a couple of walnut and pumpkin seeds. There also are some cigarettes and a few pods of the red-brown type of common bean. Estimates based on preserved food stuff would seem to indicate that perhaps 60 per cent of their diet came from wild food plants, about 30 per cent from agriculture and 10 per cent from hunting. Feces again give a slightly different picture, with about

40 per cent seemingly coming from agriculture, 40 per cent from wild food plant collecting, and 20 per cent from hunting. There are a number of other activities indicated by various artifacts in this top level. The celt and part of a gouge, the incomplete fire tongue and the incomplete shafts of arrows and atlatls would seem to indicate that some wood working was undertaken. A long pointed stick is also evidence of wood-working, and the stick may have been used for corn planting. Split wedges and conical wedges, the various scrapers as well as the leather thong seem to show that some skin preparation was done during this occupation. Weaving again is an important industry. Most of the string is S-twisted soft fibre yarn, which is made into various kinds of cords and rope. There is also quite a large amount of Z-twisted cotton, probably made on a spindle whorl. Overhand and square knots occur on the string as well as on yucca. There is some plain-weave cotton cloth, a one-over-one twilled mat, a two-over-two twilled mat, and a large twilled palm leaf basket-like implement. There is a fragment of a bow drill and also pierced shell and stone beads that may have been drilled by drill. There is a wooden flute and a paint stone and one piece of mat that seems to be painted. However, probably most of the painting was done with the pottery. Here there is a wide variety, but particularly interesting are the San Antonio red polished ware. There are many sherds of San Lorenzo general type ware, as well as a few of Palmillas.

In terms of cultural affiliation the winged drill, the Fresno and Starr points, the San Lorenzo red polished pottery, as well as the bow drill and some of the plain weave cotton would seem to indicate that here we are dealing with a component of the San Antonio phase. As might be expected in the top layer, particularly in a cave that has

been pitted by treasure hunters as well as by the aborigines there are many artifacts that are like the earlier horizons. Some of these may have been dug up while others may be cultural continuities.

Summary

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by David Kelley

